Journal OF THE AMERICAN DIETETIC ASSOCIATION

VOL. 24, NO. 10 OCTOBER 1948

THE DIETITIAN AS A TEACHER OF ADULTS
Cyril O. Houle

CORN STARCH AS AN ALLERGEN—Sources of Contact in Food Containers
Theron G Randolph, M.D.

FOOD COST CONTROL
Marjorie M. McKinley

DETERMINATION OF ACCURATE UNIT FOOD COSTS
Anna L. Preston

REFINEMENTS IN KITCHEN EQUIPMENT
Owen Webber

TOTAL, DEHYDRO, AND REDUCED ASCORBIC ACID IN CANTALOUPES
Shih Dzung Chen, Katherine J. Elliott, and Cecilia Schuck

EFFECT OF CANNING ON THE ASCORBIC ACID AND THIAMINE IN VEGETABLES
C. L. Bedford and Margaret A. McGregor

An Explanation
Laura Comstock
Administrative Adviser Resigns
School Lunches in Palestine
Neuropsychiatric Food Service Today
Dietitians—Community Leaders for Better Health

A. D. A. Annual Meeting, Boston, October 18-22, 1948

Published by THE AMERICAN DIETETIC ASSOCIATION

THERE IS ONLY *ONE*

heavy-duty

SHORTENING

A PRODUCT OF

Shortening SHQ Headquarters

WESSON OIL & SNOWDRIFT SALES CO.

NEW YORK • CHICAGO • SAVANNAH
NEW ORLEANS • SAN FRANCISCO • MEMPHIS • HOUSTON

The Dietitian as a Teacher of Adults

CYRIL O. HOULE

Dean, University College, The University of Chicago

THE MAIN goal of the dietitian is to change the behavior of people. Very occasionally she can effect this change through the exercise of her own will; in a hospital or other institution, the patient eats what is put before him. Usually, however, the will of the consumer is in control since he has some element of choice concerning his food. If his eating habits are to change, therefore, his will must be made subject to his knowledge of what he should eat, why he should eat it, and the importance of revising his diet. He must receive some education, and the dietitian is the logical one to teach him.

It might well be said that all dietitians are teachers some of the time and some dietitians are teachers all of the time. It follows that all members of the profession should have some understanding of the process of teaching and some proficiency in using its techniques, particularly with mature people. It is the purpose of this article, therefore, to provide a brief introduction to adult education for dietitians.

WHAT IS TEACHING?

The process of teaching is always an interpersonal relationship. One person tries to help another to learn; he does not merely present facts or rules to be followed. Instead, he acts in such a fashion that the student's desire to know is made stronger. It is true that information is given as rapidly as the learner can absorb it, and in an order dictated to some extent by his present knowledge, interest, and capacity. But the true teacher is always concerned with understanding and its integration in the student's knowledge and behavior.

Consider the clinic dietitian who gives an obese patient[1] an appropriately checked, printed set of instructions. Is she a teacher? The full range of her scientific knowledge may have been brought to bear on the problem presented by the patient, and the checks on the diet sheet may represent the ultimate in scientific knowledge. But all the patient sees is a piece of paper. He may or may not follow the impersonal instructions on it. He may dread the whole idea of a diet as a highly restrictive encroachment on his liberty. Lacking understanding, he may ignore the directions or attempt only halfheartedly to do as he has been told. Obviously, the dietitian has not taught this patient anything. Even verbal repetition of the printed instructions will accomplish little if the reasons for them are not made clear in language he can understand.

There is a simple test to determine if a dietitian is acting as a teacher in any given situation. What is her attitude? Her professional contacts with those she serves, as well as with the staff of her organization, may be controlled by a desire for either passivity or domination. She is then acting entirely in terms of her own feelings and is not a teacher. Again, her desire may be only to provide technical information. She is then a kind of resource person, not a teacher. But she may be concerned with making the contact profitable to the patients by developing their understanding of diet. She is then a teacher.

The educative contact may occur in a wide variety of situations. The opportunity occurs, on an individual basis, in extended cases of diagnosis and prescription, in brief and routine conferences, and in contacts with specific staff members. The dietitian may also provide group instruction in a formal class which deals generally with nutritional information or specifically with some dietetic problem such as that presented by diabetes or pregnancy. Another group situation, though a less formal one, is the staff conference within the organization when the dietitian imparts information required by her fellow workers.

How can the dietitian be most effective in such situations? The ability to teach is a highly complicated art, in which natural aptitude must be reinforced by conscious techniques. As in any other difficult art—cooking, for example—skill must be developed in a number of different operations which are performed simultaneously and rapidly, but which may be analyzed and practiced separately. The good cook appears to do everything naturally and effortlessly, somehow planning and performing her work with what seems to the untrained observer very little conscious thought or attention. When one is learning to be a cook, however, it is necessary

[1] The term "patient" is used in this article to include any person whom the dietitian teaches. Such persons may or may not be patients in the usual sense of that term.

to study and practice each operation. Only gradually does there develop that integration which characterizes master performance. Teaching is a more difficult and complicated art than cooking, but it must be learned in the same way.

The analogy can be carried one step further. The good cook needs to prepare an elaborate and complete dinner in order to give the fullest demonstration of her art. But in every operation of food preparation she performs, no matter how simple it may be, she gives evidence of her ability. So it is with the good teacher. To accomplish her educational goals to the fullest extent, she requires an extended period of contact with her student in which there is opportunity for intensive and continued study. But she, too, can show her ability to some extent even in fairly brief associations.

One case which is fairly typical will illustrate this point. A middle-aged man went through a nationally famous diagnostic clinic and was told that his difficulty was of a dietary nature. He was referred to a professional dietitian. She received him sympathetically, made him feel that she thought of him as a person and not as a "case," and obtained all the facts about his physical condition. In her conversation with him, she also learned the basic facts about his family food pattern, the acceptability of certain foods to him, his economic status, and the facilities for food preparation in his home. She then began to build up for him an understanding of how certain foods affected his particular physical condition. She told him *why* he should eat certain foods and avoid others. She answered questions directly and clearly in non-technical language. She gave him several pamphlets to take with him and suggested other references. Toward the close of the interview, the dietitian asked him several questions designed to test his understanding. The whole conference took less than an hour, but it gave him sufficient insight and motivation to have a permanent effect on his future food habits. As a result, he voluntarily selected his food more intelligently in order to remove a moderate obesity.

This simple case, though it lacks the complex physical and psychological problems with which dietitians must frequently deal, illustrates rather well certain principles of method which are inherent in all good teaching. The dietitian understood both the science of dietetics and how to persuade someone else to apply it. She was, in a word, a teacher.

There is no single master list of the principles of teaching. Life is too diverse and people too individualized for anyone to lay down universally applicable rules for all situations. The dietitian who wishes to improve her teaching skill will find it profitable to read widely in the field of educational psychology and method.[2] It is possible to borrow from that literature a few basic procedures and principles which may be of immediate use.

THE BASIC STEPS

No matter how brief or extended the contact and regardless of the number of students concerned, all teaching proceeds through five basic steps.

The first step is the selection of the goal to be reached. It is as important to decide this in advance as it is to decide upon a destination before going on a journey. To be sure, the general goal may be determined by a doctor or by the principles of good health, but to the dietitian falls the task of setting up those specific goals whose gradual attainment by her patient will lead to the general goal. The simplest technique for listing objectives is for the dietitian to ask herself what things she would like to have her patients know, understand, perform, or appreciate at the close of her period of contact with them. How does she wish to change their behavior?

The second step is that of selecting suitable subject matter. The primary determinant of the facts to be taught is, of course, the goal to be achieved. When the goal is a fairly specific one, there is little choice as far as subject matter is concerned. Teaching a patient to adjust to diabetes, for example, necessarily restricts the range of subject matter from which the dietitian may choose, since the goal to be achieved is a relatively limited one. On the other hand, the dietitian who is teaching a class in nutrition may select what she is to teach from a wide variety of possibilities. First, she must scrutinize the subject matter itself to determine what principles and facts seem to be basically important. Second, she must study the people she is to teach. The subject matter presented in a course in nutrition would be very different in a class of medical students, of graduate nurses, of average American housewives, or of Italian immigrant women.

The third important step is the organization of the subject matter for most effective presentation. Dietitians who have had to counsel or teach will recognize the importance of the correct order of introducing information. Always, the teacher must start with what the group or individual already knows as a base and then make each addition in terms of the material previously presented. Usually the best results are obtained if simple things are taught first, followed later by the introduction of more difficult material. Another organizing process might be to start with basic information and principles—even though they may not be easy—and then lead on to the adaptations and variations which occur when these principles are applied in practice. Some dietitians, for example, ask a patient to keep a record of food intake for the interval until the next teaching contact. This record can then be reviewed and used as a basis for further instruction.

The fourth step leads gradually from the third.

[2] A few selected references are listed at the end of this article.

It is the application of the best methods of presenting material to students. The dietitian as a teacher must be sure that there is a mastery of practice, knowledge, and principles at every step. She has a wide variety of instructional techniques at her disposal, of which the most common are lecturing, discussion, demonstration, recitation, reading, conducted tours, the presentation of audio-visual aids, drill, and combinations of these techniques.

The fifth and final step is that of evaluation. Here it is necessary to answer the simple question: Were the goals reached? Did each patient achieve the goals which the dietitian felt desirable at the beginning of the contact? Does he know the things he is supposed to know? Does he understand the things he is supposed to understand? And, perhaps most important, does he practice what he is supposed to practice?

Written tests and recitations are useful devices which help many teachers to determine what progress their students have made toward the goals established. The only true test for the dietitian, however, is the follow-up which each patient makes. When given free choice, does he choose wisely? If he is suffering from some dietary deficiency, does he remove it of his own free will? If his goal has been to understand the principles of good diet and their general application, does he indicate that he understands them by using them? The dietitian is not always in a position to answer these questions for herself and must rely upon such artificial devices as oral or written quizzing. However, she must always understand—and make her patients understand—that such devices are artificial and that the true test is that of practice.

SOME PRINCIPLES OF METHOD

Let us now return to the fourth step of those outlined above. Although the choice of goals, the selection and arrangement of content, and the process of evaluation are all important, they are more clearly tied in with the content with which dietitians deal than they are with the imparting of that knowledge. Method is the heart of the process of teaching.

Regardless of the particular techniques which the teacher may use in individual or group instruction, there must always be present certain basic elements. The interpersonal situation between teacher and students must be one which is conducive to learning. What are those elements which must be present in all good learning situations, including those in which a dietitian is serving as teacher?

First of all, each student should understand and accept the goals sought. He should be aware of the general objective to be obtained and the specific objectives which compose it. The activities of instruction will become meaningful for him if he understands the objectives. If the nature of the goals permit some variation, it is always useful to have the students help select and define them.

In the application of this first principle, it is important for the dietitian to realize that her patient may not be motivated to receive her instruction. He may not realize that diet is important. More frequently, perhaps, his resistance is caused by inertia, resentment of the implied criticism of his present food habits, or his fear and anxiety concerning the new regimen. His connotation of the word "diet" may include starving, nervous breakdowns, headaches, anemia, or other unfortunate consequences, some of which may have been suffered in the past by himself or his friends. He may find it difficult or annoying to obtain the foods required, or think that his special food requirements will cause his associates to think him queer or unhealthy. The dietitian can create a positive motivation by making the objectives clear to the patient, explaining and elaborating upon them in terms of his particular points of resistance. His desire to learn and to use his learning will also be enhanced by the other principles of good method.

Second, there should be a good social atmosphere. The relationship between the dietitian and her patients should be characterized by a friendly informality. The class or the individual to be taught should have the impression that the dietitian knows what she is doing, that she is friendly and approachable, and that she wishes to be of help. In group situations, patients should be helped to relax and feel at ease with one another.

Third, the physical environment should be conducive to learning. Distracting elements, whether from inside the room or out, should be kept at a minimum.

Fourth, the patients should be given a feeling of accomplishment. Adults quickly lose interest if they feel that they are accomplishing nothing. The dietitian must plan activities that will allow each one to demonstrate his accomplishment and progress. General comment in class upon group or individual growth is effective. The personal encouragement of individuals is even more so. The obese patient, for example, is stimulated to new activity when he finds that his weight is steadily dropping.

Fifth, the path of progress should be kept open for each patient. The wide range of adult ability, interest, experience, and education makes necessary a study of each person in order to provide for individual differences. These individual variations are caused not alone by ability and informational background but also by the complex of previous personal problems and adjustments.

The problem of individual differences has been very fruitfully presented for dietitians in the recent article by Dr. Charlotte Babcock in this JOURNAL (1). It is easy in teaching to consider the group as a whole, or the best members of it, and to forget that individuals progress at different rates of speed.

Sixth, methods of instruction should be varied. The dietitian as a teacher has a wide variety of procedures at her command. A few of these have been listed earlier. These methods should be varied in such a way that they are appropriate not only to the subject matter to be taught but to the patient's needs at the moment. It is axiomatic that the variance of method in teaching arouses interest, encourages the students to participate, improves attention, and helps to meet individual differences.

Seventh, the dietitian must have a clear idea of what she is doing. If the five steps in the teaching process already described have been effectively carried out, the dietitian, before each teaching contact, should understand clearly what her objectives are and how she hopes to accomplish them. However, it may be necessary for her to vary her procedure widely in terms of the immediate needs of the patients. Sometimes, it is necessary to abandon the day's goal because of particular circumstances, such as the patients' emotional state or their lack of understanding of previous work. Nonetheless, the dietitian who begins an instructional session without knowing what she hopes to achieve during it would be like the captain of a ship who left port without the slightest idea of his destination. Clearly, the element of conscious purpose must be present. Yet the dietitian must not plan the work so carefully that she ignores each patient's immediate needs.

Eighth, generalizations should be illustrated from the patient's background. Adults learn by associating what is said or done with some past experience of their own. Therefore, it is necessary to be familiar with each patient's background in order to relate the material being illustrated to previous experience. If, for example, a class is drawn from a single racial or ethnic group, it is well for the teacher of nutrition to illustrate her points in terms of the food habits of that group. It follows that various illustrations should be given for mixed groups.

Ninth, patients should be given the opportunity to participate in the process of instruction. Everybody learns by doing, and the dietitian must see to it that adequate means of response are present. This does not mean that there should never be lectures or demonstrations that exclude overt student participation. It merely means that the dietitian must stimulate mental activity by also using other methods, such as discussion or questioning.

Tenth, the patient's experience and background should be used to enrich the course of instruction. This principle is especially applicable in group situations. Since adults possess much varied experience unique to each individual, this experience can be most productive of education for other members of the group. For example, if a patient is asked to illustrate a principle, his illustration probably will be of more interest to the group than would be an example chosen by the dietitian. If a class in nutrition is made up of representatives of several different backgrounds, it is often most interesting and educative to a group to see how the same dietary principles operate in a variety of food patterns.

CONCLUSION

Unfortunately, the foregoing principles sound rather obvious. It might well be said that any intelligent person who sat down and thought about the matter for a little while could work up such a list. But—it is often the obvious which eludes us. Careful observation and study of the work of many teachers indicate that the violation of such principles is done only at the peril of failing to accomplish the teaching goals. Every good teacher whom the writer has seen has used all of these principles. Every poor teacher has violated one or more of them.

There is a fairly simple way by which dietitians may improve their ability to teach. At the close of each instructional contact, let the dietitian take several minutes to think back and ask herself if she used each of the principles suggested above. Did she really keep the path of progress open to each student? Was the social atmosphere a friendly and pleasant one? Was each student kept informed of his progress? If she answers honestly, she will discover that there are some principles which she has not applied as well as others. She should then stress the application of these principles.

Once an understanding of diet is grasped, it does not have to be brought constantly to mind. One chooses foods naturally rather than with careful, painstaking, and laborious thought. Similarly, teaching is best when it is naturally, not self-consciously, undertaken. Yet the only way in which one can achieve this natural ability in either case is through the route of conscious thought. After constant re-examination of one's own teaching performance over a period of time, these principles will become inherent in one's behavior.

REFERENCE

(1) BABCOCK, C. G.: Psychologically significant factors in the nutrition interview. J. Am. Dietet. A. 23:8, 1947.

REFERENCES NOT CITED

(1) BRYSON, L.: Adult Education. New York: American Book Company, 1936.
(2) GATES, A. I., JERSILD, A. T., MCCONNELL, T. R., AND CHALLMAN, R. C.: Educational Psychology. New York: Macmillan Company, 1942.
(3) MUELLER, A. D.: Principles and Methods of Adult Education. New York: Prentice-Hall, 1937.
(4) PRESSEY, S. L., JANNEY, J. E., AND KUHLEN, R. G.: Life: A Psychological Study. New York: Harper and Brothers, 1939.
(5) PRESSEY, S. L., AND ROBINSON, F. P.: Psychology and the New Education. Rev. ed. New York: Harper and Brothers, 1944.
(6) STROUD, J. B.: Psychology in Education. New York: Longmans, Green and Co., Inc., 1946.

Corn Starch as an Allergen

Sources of Contact in Food Containers[1]

THERON G. RANDOLPH, M.D.

Instructor in Medicine, Northwestern University Medical School, Chicago

IN THE treatment of the corn-sensitive patient, the complete elimination of all sources of corn in the diet is essential. Otherwise, one cannot expect any significant reduction in the degree of specific sensitivity to this major food. The importance of corn sensitivity is emphasized by the fact that it ranks in incidence with wheat in causing chronic food allergy, and it is unquestionably more common than sensitivity to milk, eggs, potato, orange, or other foods, as determined by a recent survey (1, 2). These statements are made as a result of direct observations of patients who had been fed a mixture of corn meal and corn sugar under the conditions of the individual food tests as described by Rinkel (3) and confirmed by Randolph and Rawling (4). The traditional indirect approach to the specific diagnosis of food allergy, that is, by means of cutaneous or intracutaneous tests with food extracts, was not employed in these studies.

The complete avoidance of all sources of corn in the diet as a prerequisite for proper experimental testing or as a therapeutic measure is rendered exceedingly difficult by its omnipresence in the American dietary. In fact, the very ubiquitousness of the corn problem has served to retard its recognition, for it is well known that patients are not inclined to suspect a food to which they are highly allergic if that food is ingested at frequent intervals. Neither are physicians apt to recognize the significance of this problem, if they are unable to instruct their patients in the elimination of all possible exposures to corn and corn products.

The purpose of this article is to point out certain commonly encountered sources of corn starch, with particular reference to the contamination of food stuffs, which exist because of the almost universal practice of sizing food cartons with corn starch.

It is general knowledge that corn starch is used freely in cooking, particularly as a thickening agent in gravies, soups, and sauces; on vegetables, as for instance in most recipes for Harvard beets; in many puddings and custards; and as a filler in cream puffs, pies, cakes, and so on.

Corn starch is employed in all the common baking powders because its unusual qualities (very fine division and low moisture content) serve to coat and separate the active ingredients of such powders. Corn starch is also used in confectioner's sugar in order to avoid lumping. Powdered sugar, in turn, is employed in the majority of commercial frostings, many candies, and for dusting of such foods as doughnuts and chewing gum.

In addition, it is not commonly known that individuals in certain low-income groups have the peculiar practice of chewing corn starch.

CASE HISTORIES

Interest in the exposure to corn that might result from its use as a sizing agent in food containers arose from observations in the following cases:

Case I

Subject M. L., male, age fifty, a native of Texas, had noticed intermittent bouts of soreness, drawing, and pulling of his neck muscles in addition to unexplained attacks of frequency and nocturia beginning in 1930. In 1940 he began to complain of acute episodes of unexplained fatigue; this was accentuated on arising and was present only intermittenly at first but later became chronic and continuous. He initially developed rhinitis and bronchial asthma in the fall of 1942 and was first seen early in 1943, although he was not correctly diagnosed allergically until January, 1946. During this two-and-one-half-year period, he had continuous daily asthma, having been hospitalized three times for status asthmaticus (a total of twelve weeks); was diagnosed as having a cylindrical type of bronchiectasis; had repeatedly been bronchoscoped; and had spent several months in the Southwest. During this entire period his asthma and rhinitis followed the monotonous course typical of masked food allergy (2–5), in that his symptoms were accentuated early in the morning on arising, improved after breakfast, and invariably increased about 5:00 p. m. He also complained of sticky eyelids, an occasional dragging headache, and an occasional attack of excessive gas.

On one occasion corn had been suspected of causing an

[1] This investigation was financed by a grant from Swift & Company. Received for publication April 27, 1948.

acute attack of rhinitis; tomatoes and sweet potatoes were also under suspicion.

His physical examination was negative, except for the typical findings of bronchial asthma and allergic rhinitis. Cutaneous and intracutaneous tests were negative save for a positive reaction to house dust in high dilution, although no points in the history or the subsequent management suggested inhalant allergy.

An individual food test with canned corn was associated with excessive gas 20 min. after the first feeding, with rhinorrhea at 50 min. He remained unusually tired for the remainder of the day and had a slight increase in his asthma that night. Although a few other foods were incriminated, corn has remained his most important allergen. With the avoidance of known food offenders, he remained 80 per cent improved, losing no time from work for a period of several months. A trial of house dust avoidance and therapy did not cause any further improvement.

In May, 1947, this patient made the brilliant and apparently original observation that he had increased asthma whenever he drank milk dispensed in paper cartons, whereas he was able to drink milk sold in glass bottles without trouble. Inquiry from the manufacturer revealed that the carton under suspicion contained a corn starch sizing (2.5 per cent by weight) on the inner surface of the container. The presence of starch on this surface was confirmed by a strongly positive iodine reaction. Although the fabricated cartons were completely immersed in liquid paraffin, a continuous coating of wax does not exist over the folds and creases of the carton as evidenced by a positive iodine reaction for starch limited to these areas when a dilute solution of iodine is poured into the completed bottle.

With the avoidance of additional corn starch exposures from food containers, this patient has been completely free of allergic manifestations during the past nine months.

Several other corn sensitive patients have also been observed to have allergic symptoms following the use of milk from this type of container (i.e., a milk carton with a square base, rectangular sides, and peaked top).

Case II

Subject M. A., a housewife, age twenty-nine, who had been subject to chronic perennial catarrh as long as she could recall; this was characterized by post-nasal dripping, morning rhinorrhea, sneezing, and intense itching of her nose. For three years prior to her first visit, she had also had typical ragweed hay fever, which had been complicated by bronchial asthma during the most recent season. Her rhinitis became continuous during the winter of 1945–46, and she had several acute episodes of respiratory symptoms diagnosed as colds.

As a child it was often necessary for her to be taken to school, for she was unable to walk in the mornings because of stiffness and lameness of her leg muscles. With the onset of her nasal symptoms, she had a recurrence of muscle aches and pains, usually involving the posterior neck muscles, hamstrings, and calves. Coincident with these symptoms, she developed intermittent headaches which awakened her at night or began immediately on arising; they were usually frontal and bilateral, extending into the posterior neck and associated with nausea and vomiting. Another major complaint was a devastating fatigue which had been present continuously for over a year prior to her initial visit. She was first seen in January, 1947, at which time her physical examination was negative except for the presence of the typical mucous membranes of chronic allergy and a cervical erosion.

House dust was suspected of causing an accentuation of her nasal symptoms. She gave the additional history, curiously, of having paroxysms of sneezing whenever she did her ironing. She did not suspect any foods and said that she could eat anything.

On making skin tests with inhalants, positive reactions were found to house dust, ragweed, pigweed, kochia, grass, and elm pollens and to the fungi, alternaria and hormodendron. A program of dust avoidance and specific hyposensitization resulted in partial improvement of her respiratory symptoms but did not change her continuous headaches, fatigue, or muscle aching. During this interval she developed one very severe headache while ironing heavily starched curtains, first noticing itching of her nose, nasal stuffiness, and finally a headache.

An individual food test with corn meal and corn sirup was followed by a sharp accentuation of her head pain in association with somnolence and rhinorrhea beginning 5 min. after experimental feeding. Within an hour she experienced a severe chill, remaining chilly and "achey" throughout the afternoon of the test. She retired early that evening convinced that she was developing the grippe. She remained tense and "nervous" throughout the night, tossing about, and obtained little sleep. This violent reaction to corn required four days to subside.

The elimination of corn and other major incriminated foods resulted in the relief of her chronic symptoms for a period of six weeks. Then, for no apparent reason as far as she could detect, she awakened one morning with a violent headache, chill, generalized aching, and acute pulling and drawing of the posterior neck muscles. She also complained of profuse rhinorrhea, nasal stuffiness, and her temperature was 100.6°F. By the following morning all her symptoms had gradually subsided, except for residual fatigue.

The milk bottle observation of the preceding case had been made three days earlier. This patient, also tolerant of milk, was then questioned as to the type of milk and cream containers that she had been using. She had been obtaining milk in glass bottles from a given dairy but in changing over to another dairy had been without a delivery for a 48-hr. period. The afternoon prior to the onset of her unexplained clinical reaction, she had purchased a carton of milk from her local grocery and had used milk from it in the evening meal.

Carton milk from the same source was then tried again four days later and produced an identical reaction. Paraffined and unparaffined cartons were obtained from this manufacturer (i.e., cartons with square bases, rectangular sides, and flat tops). Experimental tests were then performed with the water which had stood over night in this type of container. The subject drank a glass of water from the paraffined bottle at 9:00 a. m. after fasting. By 9:30 she complained of a sense of tightness of the muscles of the neck and by 9:45 she noticed the onset of stuffiness of her ears and a slight headache, the latter became progressively more severe throughout the day. She went to bed at 10:00 p. m. but was awakened at 3:00 a. m. with aching and drawing of her legs and was unable to sleep for 2 hr. These symptoms are typical of the muscular complaints of allergic origin originally described by Rowe (6) and recently reviewed by the writer (7). The following morning she still had a dull headache which persisted to some extent throughout the day.

Five days later she tested the water from the unparaffined container in a similar manner. She took the water at 11:15 in the morning; this was followed by a reaction of identical type but of greater severity. In 2 hr. she had a violent headache. She omitted the evening meal and retired at 7:00 p. m. because of her extreme fatigue and head pain. The headache and residual fatigue were still present the following morning and persisted through the second day. This test had been done with a negative suggestion which included the implication that the wax of the carton bottle

was under suspicion. In reporting her experiences with this test, she said: "I didn't expect any trouble from this one."

When the unwaxed containers of this make were subjected to the iodine test for starch, there were strongly positive reactions on the inner surfaces of the square tops and bottoms but the sides were negative for surface starch. When iodine was poured into the waxed container, a starch reaction occurred in a rim about the top of all containers tested, the inner surfaces of these cartons being otherwise free of starch.

The subject returned several days later stating that she could account for all symptoms (on the basis of inadvertent exposure to corn) except for a severe headache which followed a meal of spare-ribs and sauerkraut, although there had been no evidence at any time of sensitivity to pork, cabbage, or apples. It was then learned that she had obtained the sauerkraut from her market in a carton container. Four days later sauerkraut dispensed in the same make of container (Illustration 1) produced an identical reaction when taken as the only food in a test meal.

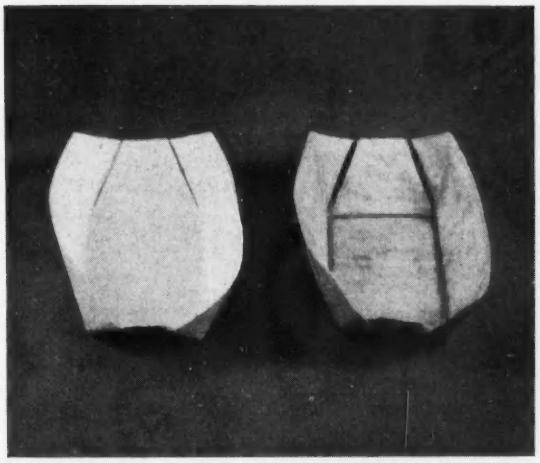


ILLUSTRATION 1. *Duplicate containers similar to those in which sauerkraut eaten by patient described in Case II was dispensed. Note reaction of carton on right to iodine. This color reaction (actually dark blue) indicates the presence of surface starch.*

A similar experiment was then set up as outlined above, with the exception that a control was used. At the time of these tests, the subject had been symptom-free for several days and was unaware whether she was drinking tap water or "box water." She first noticed a mild headache an hour after drinking water stored over night in the carton; this persisted for several hours and was followed by residual fatigue. She claimed that there was no other reason to account for the tiredness and that it was distinctly different from the way she felt on other days. The water from a glass bottle which was used as a control failed to produce symptoms.

With the continuation of inhalant and dietary management, she has not had any unexplained allergic symptoms. She has learned that she does not have a headache while ironing if she does not starch her clothes.

Case III

Subject J. M., male, age forty-six, had been subject to atopic dermatitis until the age of eight years; attacks of unexplained abdominal distress, cramping, and diarrhea since childhood; a mild perennial allergic rhinitis; and late summer hay fever since 1937, developing asthma for the first time in the 1945 pollen season.

He was seen medically in 1944 and investigated allergically the following year. He did not suspect food sensitivity, but he knew that house dust exposure would increase his nasal symptoms. He reacted positively to skin tests with the following inhalants: house dust, ragweed, and hog and cattle dander. A month of specific inhalant management failed to relieve his rhinitis or gastrointestinal symptoms.

An individual food test with corn meal gruel on November 1, 1945, performed at a time when he was relatively symptom-free, was associated with nasal obstruction 45 min. later, followed shortly by lacrimation and coughing. Because of his acute reaction, only a single feeding was given. Immediately after leaving the office, he noticed generalized flushing, which was followed rapidly by blurring vision, dizziness, and faintness. In transferring from one street car to another 90 min. after the onset of his initial symptoms, he fell in the street, unconscious. Although he did not recall falling, he apparently regained consciousness shortly after the fall. Extreme faintness and dizziness continued for 15 min. One-half hr. later, he developed severe chills which persisted for 3 hr., during which time he vomited. Six hr. after leaving the office, he passed an explosive, diarrheic stool and remained extremely tired for the next 24 hr.

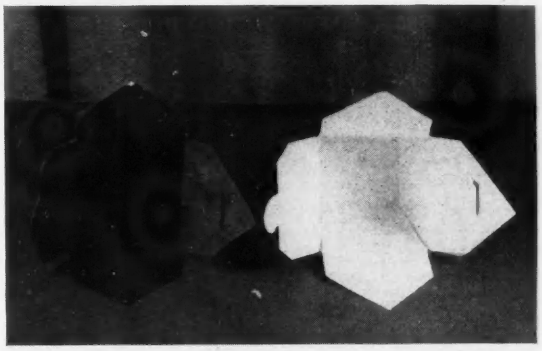


ILLUSTRATION 2. *Patient described in Case III drank water which had stood in a cardboard container similar to these and later experienced allergic reactions. Carton on left, which was treated with iodine, indicates presence of surface starch.*

With the continuation of dust avoidance, specific hyposensitization, and corn avoidance, he has not had any unexplained attacks of rhinitis or gastrointestinal symptoms for the past two years. He claimed that he felt much better generally with the elimination of corn and all products derived from corn, stating specifically that he was less sluggish and had more zest for work.

In early August, 1947, he drank 200 cc. of water which had stood in a cardboard container illustrated in Illustration 2. Twenty-five min. later he developed profuse rhinorrhea and nasal stuffiness which persisted in the acute stage for several hours and required three days to subside.

PAPER PRODUCTS AS SOURCES OF CORN

These sample observations were confirmed in other corn sensitive individuals and led to an investigation of all commonly used paper food containers and eating utensils sold in the Chicago area. The iodine test for the presence of starch was employed in these

studies, the procedure consisting of dipping or spraying a paper container with 0.05 per cent Lugol's solution. Although this test is not specific for corn starch (tapioca starch, for instance, gives a similar color reaction), it is known that corn starch is the only preparation of this type used widely in paper manufacturing processes.

According to Torre and Gill (8), corn starch or its conversion products are used by the paper industry for beater sizing (i.e., addition to the paper pulp), surface sizing (i.e., addition to the dried sheet), or as an adhesive for laminated sheets. The principal reason for adding starch to the beater is to increase the strength of the paper. When starch is applied to the surface, it insures a smoother sheet with a marked reduction in the surface fuzz.

Petroleum waxes are added to paper employed for carton manufacture by means of various processes which are of interest in this connection because of their varying efficiency in covering the sized surface of the cardboard. Three processes by which wax is applied to cardboard are illustrated in respect to their

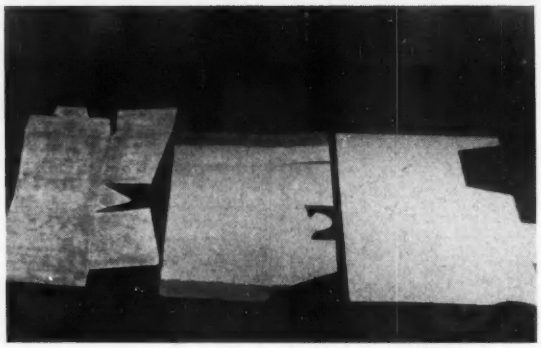


ILLUSTRATION 3. *Cartons waxed by different processes, namely (from left to right): saturation or impregnation with wax; the hot wax process; and the cold wax process. Dark color on each carton, produced by iodine test, indicates presence of surface starch.*

efficiency in covering the starched surface of the paper in Illustration 3. The section of the carton to the left is wax-saturated or impregnated. As judged by the iodine reactions, this method of applying wax is the least effective in covering the starched surface of the paper. Wax was applied to the second carton by means of the so-called "hot wax" process. Note that the coverage of this sample is only fair and that the ends are unwaxed so as to permit gluing. The third carton is treated by the "cold wax" process, the most effective means of covering a starched surface as judged by the iodine reactions on these samples. This method imparts a continuous film to the sheet but has the disadvantage of suffering from brittleness on exposure to cold.

The two types of milk bottles previously described are waxed by immersion in liquid paraffin. The addition of microcrystalline waxes to paraffin waxes obviates this difficulty in part by increasing the ductility of the combined product roughly proportional to the amount of microcrystalline wax used (9).

PAPER PRODUCTS TESTED FOR CORN

Various types of waxed and unwaxed food containers obtained from the local market, container companies, and paper mills were tested for the presence of surface starch by means of immersion in dilute iodine solution with the following results.

Milk bottles and caps. At least certain samples of all types of milk and cream cartons on the local market gave a positive iodine reaction for starch on the inner surface. In addition to the two types previously described, tests were also performed on a conical type container of much more limited distribution. This carton is also waxed by immersion in liquid paraffin.

Many of the caps used on standard glass milk bottles and glass cottage cheese containers also gave

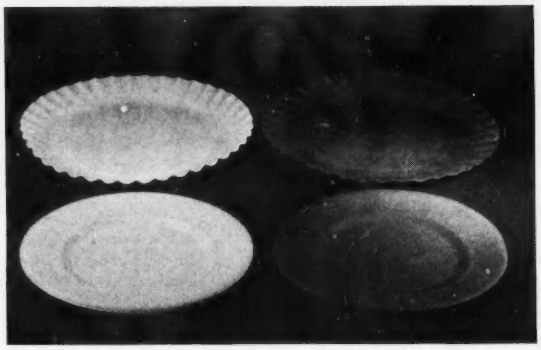


ILLUSTRATION 4. *Duplicate paper plates: the ones on the right have been treated with iodine.*

a strongly positive iodine reaction. It is of interest that various lots of the most widely distributed brand were much more strongly positive in this respect than other samples from the same source.

Meat market containers. Paper containers of the type used in dispensing ground meat, bulk cottage cheese, and sauerkraut (Illustration 1), reacted to iodine in various degrees. Some containers of this type were starch-free.

Paper pails and paper cylinders. The same statements may be made in respect to the iodine reactions of this type of container as were made in regard to the above containers; one of the worst samples encountered is shown in Illustration 2.

Paper cups. Every make of paper cup tested, with the notable exception of a cup for cold drinks made by one firm, appeared capable of giving a starch reaction. In certain brands, only the bottom was starched and in others the starch reaction appeared

limited to the adhesive used in attaching the bottom of the cup to the side. In still others, the starch reaction was limited only to the side seams. Practically all cups of the types used on trains and in other public fountains reacted positively with the iodine test. Clinical reactions have been observed in several patients following the drinking of liquids from such containers.

Paper plates. Approximately 50 per cent of the paper plate samples reacted positively to the iodine test. All products of two well known firms gave negative reactions. These plates appeared to be made by the molded wood pulp process rather than cut from sheets of cardboard. All plates which had a printed design or color on the upper surface that were tested showed the presence of starch. The statement made in respect to table plates also holds true for small service plates and butter patty dishes. Samples are shown in Illustration 4.

Paper baking dishes. All samples tested were found negative for surface starch.

Fountain cones. All samples tested gave at least a slightly positive reaction for the presence of starch.

Paper spoons. The samples secured were test negative although a wide selection was not obtained for testing.

Cartons used for dispensing frozen foods. One widely used type of container employed in packaging frozen foods consists of an inner paper bag which is in direct contact with the food. It is of interest that starch as indicated by the iodine test, was present only on the inner surface of this bag. When a frozen food is permitted to thaw in the container, a larger proportion of the starched inner surface is removed with the food than if the food is taken from the bag in the frozen state.

The single package containers, apparently waxed by the impregnation process, showed varying degrees of iodine reaction on the inner surfaces.

The single layer container, apparently waxed in the flat sheet and then molded to box form and attached to metal ends, revealed multiple "iodine" lines at the corners, indicating that the waxy surface was broken by the processes employed in bending the sheet to form the box. Relatively few samples tested resulted in a completely negative reaction. Certain varieties of frozen foods packaged by the same firm were found in widely differing types of packages; some were free of surface starch and others strongly positive.

Plastic food wrappers. Certain brands of processed cheese have recently been marketed in tightly adherent plastic containers. These wrappers are commonly dusted with corn starch, a process which facilitates handling the flat sheets of plastic in that it makes them less tacky. The starched surface of the wrapper is then placed adjacent to the cheese and adheres thereto as may be easily proved by testing both the cheese and the wrapper with iodine.

Cellophane-type containers, other than the above, appear to be free of surface starch as indicated by negative iodine tests.

Wrapping paper. In view of the many varieties of papers used for wrapping food, it is impossible to generalize as to the presence or absence of a starch surface sizing. The greatest possibility of corn exposure would appear to be in the papers used for dispensing meat and fish, in view of the moist condition of these foods. The old type wrapping paper used for this purpose prior to the present pulp shortage was less commonly sized than the wide varieties of papers now employed.

Wax paper. The wax papers tested, including several brands, were all negative for surface starch as indicated by an iodine test.

Vegetable parchments. Parchment sheets of the type used to wrap butter and other foods having a liquid phase in prolonged contact with the container were invariably negative for the presence of starch. This finding was as expected in view of the manufacturing processes employed in making vegetable parchments.

DISCUSSION

These studies permit of only one conclusion. To avoid corn starch, a patient must not eat foods or drink liquids dispensed in or served from paper containers, unless he employs one type or one brand of paper cup or a few acceptable brands of molded pulp paper plates. In view of the common exposure to frozen foods, the patient sensitive to corn should eat only frozen vegetables wrapped in cellophane. Commercially canned fruits and frozen fruits are almost completely eliminated for the corn sensitive patient on another count, that is, they commonly contain corn sugar. Canned peas and many other vegetables also contain added dextrose as permitted by the provisions of the Food, Drug and Cosmetic Act.

The sources of corn sugar will be considered in more detail in another communication (11).

Slowness in recognizing the clinical significance of corn sensitivity has been due in part to the fact that physicians, dietitians, and patients have not been aware of the sources of corn. Another major source of corn starch, described elsewhere, is its frequent use as an excipient in pharmaceuticals (12). Our ability to handle clinical problems of corn sensitivity has been improved by recognition of the fact that foods, otherwise free of corn, may be contaminated with corn starch as a result of contact with paper or cartons containing a starch sizing or certain plastic containers having previously been dusted with corn starch. From a clinical standpoint, this problem seems to be limited principally to those foods having a liquid phase in contact with the wrapping material.

This problem, not previously described to our knowledge, is assuming increasingly greater impor-

tance in view of the present tendency in the merchandising of food, that is, the packaging of small units of foods and the use of disposable wrappers.

SUMMARY

Corn starch is used as a sizing on many types of paper and cardboard and to dust the surfaces of certain plastic wrappers used in dispensing common foods. Foods having a moist or liquid phase in contact with such containers may become contaminated with corn as a result of this common practice.

Many highly corn-sensitive patients, who are otherwise free from exposure to corn, will react with unquestionable symptoms to the ingestion of milk dispensed in paper cartons or to the ingestion of any other food which has stood with a liquid phase in contact with a starched surface.

The practices of waxing containers are effective to various degrees in covering a starched sizing.

Adequate treatment of corn sensitivity not only requires the avoidance of foods containing corn, but also entails the use of corn-free containers and dispensing utensils, such as cups, plates, spoons, and so on, when dealing with foods having a moist or liquid surface phase.

REFERENCES

(1) RANDOLPH, T. G., AND YEAGER, L. B.: The incidence of allergy to major foods. Proc. Central Soc. Clin. Research 20: 85, 1947.
(2) RANDOLPH, T. G.: Food allergy. M. Clin. North America January ,1948.
(3) RINKEL, H. J.: Food allergy. 2. The technique and clinical application of individual food tests. Ann. Allergy 2: 504, 1944.
(4) RANDOLPH, T. G., AND RAWLING, F. F. A.: Blood studies in allergy. 5. Variations in total leucocytes following test feeding of foods—an appraisal of the individual food test. Ann. Allergy 4: 163, 1946.
(5) RINKEL, H. J.: Food allergy. 1. The role of food allergy in internal medicine. Ann. Allergy 2: 115, 1944.
(6) ROWE, A. H.: Gastro-intestinal food allergy, a study based on 100 cases. J. Allergy 1: 172, 1930.
(7) RANDOLPH, T. G.: Muscular symptoms of allergic origin. In preparation.
(8) TORRE, P., AND GILL, L.: Corn starch. Paper Industry 16: 254, 1934.
(9) Use of petroleum waxes in the paper industry. Oil Power 22: 10, 1947.
(10) RINKEL, H. J.: Personal communication.
(11) RANDOLPH, T. G., AND YEAGER, L. B.: Corn sugar as an allergen. In press.
(12) RANDOLPH, T. G.: Pharmaceutical excipients as food allergens. In press.

Acute Potassium Deficiency in Diabetic Acidosis

Several recent clinical studies have demonstrated that diabetic acidosis, particularly after insulin therapy, may be complicated by an acute potassium deficiency. The evidence for such a significant conclusion is the consistent observation of a low serum potassium concentration in this condition and a favorable, almost dramatic, response of the acidotic patients to administered potassium chloride. Further supporting evidence is found in the general symptoms shown by the patients, such as paralysis of voluntary muscles, respiratory distress, and electrocardiographic abnormalities. These symptoms have been observed also in chronic potassium deficiency in experimental animals. The prompt and decided improvement of the insulin-treated patient given potassium therapy has led one group of investigators to note that "the changes (respiratory distress, altered electrocardiogram, 'shock,' etc.) are due not to a low blood sugar level, as has sometimes been assumed, but to a shift of potassium from extracellular to intracellular space . . . ".

The fundamental reason for an acute potassium deficiency in diabetic acidosis is not completely understood, but a number of suggestions have been made. One view is that a renal loss of potassium associated with the diuresis, particularly after insulin is administered, is a primary contributory factor to the acute depletion of potassium. Such a conception is perhaps supported by the observation of a potassium deficiency in chronic nephritis as indicated by low serum potassium values, flaccid paralysis, abnormal electrocardiograms, and a prompt response to potassium chloride therapy. Another view is that there is a shift of potassium from the extracellular to intracellular fluid, a view which receives some support from a current critical study of exchanges of potassium and sodium in patients with various conditions, including familial periodic paralysis, a condition also characterized by aberrations in the metabolic disposition of potassium. The Yale investigators reached the general conclusion that in experimental and clinical conditions in which there is dehydration, as may occur in diabetic acidosis and chronic nephritis, there is usually a transfer of potassium from the extracellular to intracellular fluids to replace losses in the latter as a result of renal excretion or possibly for other reasons. Such a concept would appear to explain satisfactorily the low serum potassium values and consequent physical symptoms seen in some cases of diabetic acidosis, chronic nephritis, and familial periodic paralysis. The general concept that human deficiency diseases may sometimes be endogenous in origin rather than due to the classical exogenous or dietary lack of essential substances is emphasized by the foregoing studies.—*From Current Comment, J.A.M.A. 137: 1044 (July 17), 1948.*

Food Cost Control[1]

MARJORIE M. McKINLEY[2]

FOOD COST control is a primary concern in any food service unit, whether it be a college or university, hospital, industrial or commercial operation. To formulate simple procedures and forms to provide accurate food cost information for management, the committee working on Project #2 of the Food Administration Section of the American Dietetic Association for 1946–47 initiated a study of food cost control practices. This paper will include both a discussion of food cost control and food cost control practices in colleges and universities that participated in this study.

AREAS AFFECTED BY COST CONTROL

Accurate food cost information, secured by using specified procedures and records, is essential. From the standpoint of the food service manager, however, food cost information in itself is, of course, practically useless unless it is used to guide planning and detect conditions which need the constant attention and action of management. But, if the competent food service administrator has at all times a complete understanding of her food cost status as reflected in *current* food cost records, she is in a position to make reliable decisions which will enable her to fulfill more completely her responsibility to those she is serving and to the institution or organization whose interests she represents.

Menu Planning

A food cost control program must be incorporated into every phase of planning, production, and service. In menu planning—the nucleus of the entire food service operation—a knowledge of food costs is essential. The menu served affects costs and vice versa. The person responsible for menu planning makes decisions which eventually determine the food to be purchased, the food to be prepared, the equipment to be used, the satisfaction of the people who are served, and the proportion of income which will be spent for food.

In planning menus it is important to stay within the food budget, but it is also important to know if food costs are below the budgeted allowance. Some margin of safety between actual and budgeted food cost is desirable, but if significantly less is spent over a continuous period of time than allowed, the menus should be carefully checked to be sure they are acceptable and nutritionally adequate. If the food served is meeting these criteria and food costs are below the budgeted allowance, the charges for food may be lowered or the money reassigned to meet more fully the objectives of the food service. During the current inflationary period, the problem most dietitians face is not to exceed the allowance for food in the budget. Current information about food costs is especially important to the menu planner during periods of high and fluctuating prices.

Two types of information needed are the daily or weekly food cost and the current food cost of individual menu items reduced to a per portion basis. A daily food cost report gives a current and comprehensive picture of food costs in a concise form. Typical information given on this report may include costs distributed according to food groups, cumulative food costs for the period as well as daily food costs, and the income (Fig. 1 and 2). The breakdown according to food groups will permit a check on the nutritional adequacy of the menus by comparing the percentage distribution of expenditures for food to recommended standards. Per portion costs are determined by figuring the cost of standardized recipes which yield a known number of standarized portions.

Purchasing

The next important step at which food costs are affected is purchasing. Here a purchase record is needed which will give information about fluctuations and trends in food prices and become a basis for comparing the quality and price of food sold by

[1] The report in the latter half of this paper is based on information obtained in Project #2 of the Food Administration Section of the American Dietetic Association for 1946–47, "A Study to Stress Food Cost Control in Food Services"; Lynette Gatten, Committee Chairman; Alice M. Fenno, Chairman, A.D.A. Food Administration Section. The author wishes to express her appreciation to Dr. Grace M. Augustine for her assistance in editing the material.

[2] Member, Project #2 Committee of the Food Administration Section of the American Dietetic Association, 1946–47.

different suppliers. Also, such a record provides information about amounts of food used as a guide for future buying. In order to control waste and avoid tieing up an unnecessary amount of money in food inventories, the amounts of food needed must be known; and the quality needed for a specific use must also be known, for poor quality not only increases food cost, but may also affect labor cost. Purchasing can best be done by the use of definite specifications; and in purchasing, as well as menu planning, cost reduced to a per portion basis is significant.

Once purchases have been made, procedures must be established to check the receipt of food to be certain that the quality and quantity of food ordered is received. This checking is most effectively done if the responsibility is definitely fixed and if some simple system is established to report the quality and quantity of food received. Scales should be provided adjacent to the delivery entrance so that weights can be checked at the time of delivery before food is accepted.

Storage and Issuance of Food

Adequate facilities for storage of food and a systematic method of controlling food stores are necessary. If storage facilities are inadequate, it will be impossible to take advantage of price reductions which result from large quantity purchasing, and delivery costs will be increased. Also, inadequate refrigeration or unsuitable dry storage can cause spoilage and waste of food on hand.

It is desirable for storage of food to be concentrated in one area so that issues can be controlled and the responsibility for issuing fixed with one or two people. Then, the refrigerators and storerooms can be locked when the person responsible is not present. If an accurate record is kept of food issues, the information can be used in determining daily food costs (Fig. 3).

Issuing meat from the refrigerator can be simplified by the use of a meat tag system (Fig. 4). A tag indicating the item, date received, vendor, and weight is attached to each piece or container of

QUADRANGLE — DAILY FOOD COST — Day: _____ Date: _____

ITEMS	AMT.	COST	GROUP COST	ITEMS	AMT.	COST	GROUP COST
I Cereal Products				IV Fats, Sugars, etc.			
a. Bakery				a. Fats & Oils			
				b. Sugar Products			
b. Cereals							
				c. Miscellaneous			
II Milk Products							
				V Protein Foods			
				a. Meats			
III Fruits & Vegetables							
a. Fruits							
				b. Eggs			
				c. Cheeses			
b. Vegetables							
				Total Daily Food Cost:			

Revenue _____
Raw Food Cost % _____
No. Persons Served _____
Raw Food Cost per Person Served _____
No. Paying Residents _____
Raw Food Cost per Paying Resident _____

FIG. 1. *Daily Food Cost Report form used at the Quadrangle and Hamilton Hall, women's residence halls, Montana State College, Bozeman.*

meat. The advantages of this system are: (a) The meat can be issued without a second weighing. (b) Knowledge of the date the meat was received enables the storeroom clerk to issue first the meat received first. (c) Any shrinkage of the meat during storage is allocated and therefore included in the daily food cost the day the meat is issued.

Food Preparation and Service

Food preparation procedures affect food costs. Adequate supervision of food preparation is necessary. Employees must be trained, for unskilled workers not only waste food, but produce food which does not meet the standards of quality desired. Amounts to be prepared should be determined by a supervisor who has access to information from which she can estimate the probable number to be served, for weather conditions, activities in the community, and other factors cause fluctuations in the number served (Fig. 5). The necessary equipment, in good condition, should be available. Standardized recipes should be used, not only to control the cost of food but also the quality. Skillful use of leftovers is necessary.

Uniform portions in serving are essential if a cost control system is to be effective. Here again, careful and continuous supervision of employees is needed.

Plate Waste

A regular check on food preparation waste and plate waste should be made and the reasons for rejection of food determined. Some factors responsible for plate waste may be personal dislike of a particular food, a personal health or emotional problem, an unacceptable menu combination, food unattractively served, or too large portions.

Budgeting and Analysis

A comprehensive record of food costs is the only reliable basis for estimating the amount of money needed for food in future periods. By studying expenditures for food in the past period in relation

STATE UNIVERSITY OF IOWA

CURRIER DINING SERVICE

DAILY REPORT ON FOOD COST

Day ..... Date.....194..

COMMODITIES	Cost Per Meal To Date	Average Cost Per Day	TOTAL COST TODAY	TOTAL COST TO DATE	RATIOS TO TOTAL FOOD COST TODAY	RATIOS TO TOTAL FOOD COST TO DATE	RATIOS TO TOTAL FOOD COST LAST MONTH TO DATE	RATIOS TO TOTAL FOOD COST LAST YEAR TO DATE
Meats		$	$	$	%	%	%	%
Poultry								
Seafood								
Subtotal		($)	($)	($)	(%)	(%)	(%)	(%)
Fresh Fruits and Vegetables								
Butter								
Eggs								
Milk and Cream								
Ice Cream								
Bread and Rolls								
Coffee, Tea and Cocoa								
Staples and Groceries								
GRAND TOTAL		$	$	$	%	%	%	%

	TODAY	TO DATE	LAST MONTH	LAST YEAR
Number of Meals Served				
Average Cost A Meal				
Average Cost Per Day				

SIGNED.....

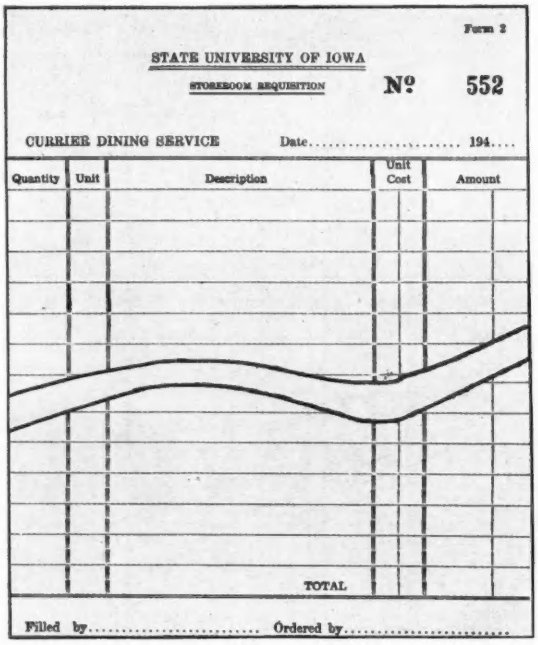
FIG. 2. *Form used by Currier Hall Dining Service, State University of Iowa, Iowa City, to show cumulative daily food costs. Two copies are made, the carbon copy being retained in the dietitian's office.*

to the degree to which the objectives of the food service were reached, there is a tangible basis for future planning. The expression "figures talk" is literally true, when alteration of budget allowances is being requested or changes in charges for board or food are being determined.

Analysis of accurate food cost information enables management to detect waste, misuse, or theft of food. Also, when accurate food cost information is available, it can be compared with the food costs in comparable operations or with the food costs in the same operation over different periods of time.

COLLEGE AND UNIVERSITY FOOD SERVICE PRACTICES

Two and one-third million students are enrolled in colleges and universities today. A large proportion of these students are housed in the institutions' residence halls. An even larger proportion depend on the institutions' food service units to provide part or all of their meals. Because of the scope and extent of these operations, it was thought appropriate in planning Project #2 to consider the problems of food cost control in colleges and universities separately.



Form 2

STATE UNIVERSITY OF IOWA

STOREROOM REQUISITION No. 552

CURRIER DINING SERVICE Date..... 194....

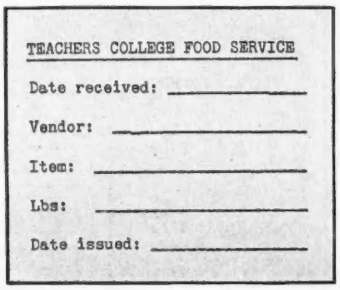
Quantity	Unit	Description	Unit Cost	Amount
		TOTAL		

Filled by..... Ordered by.....

FIG. 3. *Storeroom Requisition form used by Currier Hall Dining Service, State University of Iowa. Two copies of this form are made, the carbon copy being retained in the department where the requisition originates, to be turned in later to the dietitian's office. The original goes to the storeroom.*

The fundamental objectives of most college or university food service units are the same. There is not usually an attempt to make a profit, although all actual cost and expenses, including amortization of debts, interest on debts, depreciation on buildings and equipment, and other operating expenses and costs, are usually included in the budget and met out of revenue from students and income from other sources. Another almost universal objective is to provide nutritious, palatable food in pleasant surroundings at a minimum cost to the students. The amount of money which the majority of students have to spend is limited. If the cost of food, one of the main items of expense for the student, can be decreased and the established standards from a nutritional, social, and educational standpoint still be maintained, it will be possible for more students to meet the problem of financing higher education.

Although the objectives of the food service units are usually parallel, in operation they may vary considerably. There are the small, individually managed units serving one hundred to two hundred students and the large dining halls serving a thousand or more students. There are many campuses which have centralized management of the food service units in all the residence halls on the campus. If food service is in a residence hall, the revenue for food is probably collected from the students at the beginning of each semester, quarter, or month; in other units, a pay cafeteria may be available. In the first instance, food costs are usually considered on the basis of the cost per person per day or per meal; in the latter operation each menu item is priced, and food costs in relation to income are considered on a percentage basis.



TEACHERS COLLEGE FOOD SERVICE

Date received: _____

Vendor: _____

Item: _____

Lbs: _____

Date issued: _____

FIG. 4. *Receiving form for meat used at Teachers College, Columbia University.*

In residence halls, the type of service may vary; there may be table service for all three meals or a combination table and cafeteria service, or a complete cafeteria service. Another point of variance is the extent to which student labor is used and the way in which students are paid.

As colleges and universities have grown in student enrollment and physical size, there has been a tendency to centralize many of the administrative functions to maintain greatest efficiency and control. The centralizing of two of these functions, namely purchasing and accounting, has created some problems for the dietitians responsible for the food services. Usually the information from the pur-

chasing and accounting departments is not received soon enough to be useful in planning current operations. It is often found, too, that the records maintained by these departments are not patterned to reveal the complete information necessary for planning and directing a food service department. The dietitian has found that she needs records to supplement those kept in the purchasing and accounting departments if she is to have an adequate picture of her food costs available to guide her planning.

No one system of food cost control can be formulated that will meet the needs of every college and university food service department. The overall administrative policies of the institution will to a large extent determine the procedures followed and records kept. Procedures and records should be as simple as possible. When the purchasing and accounting are done by separate departments, it is important that there be a close cooperation with these departments so that efforts and records are not unnecessarily duplicated. Most institutions have established procedures and forms which apply to all departments. Purchase requisitions, purchase orders, and invoice forms are usually prescribed by the administrative office for the use of all departments, and other routine procedures and reports are often required. Therefore, when the food service department develops its food cost control procedures and designs its system of food cost records, it is necessary to begin planning from the existing procedures and records prescribed by the administration and supplement these only to the extent that they are needed. Other factors which will affect the procedures followed and records kept are the relative budget allowances, the organization of the department, the physical layout of the department, the type of employees, methods of food preparation and service, and the extent to which the food service units are used as a laboratory for students in institution management courses.

Of the 308 questionnaires sent by the committee of Project #2 to food services of all types, 50 went to college and university food services. Twenty-seven of these questionnaires sent to colleges and universities were returned; replies came from seventeen states. The questionnaires were designed to determine the food cost control procedures and forms in current use, and the directors of food services were asked to evaluate their procedures and forms and attach to the questionnaire copies of each type of form used.

MONTANA STATE COLLEGE DINING HALLS MEAL COUNT

MONTH	DAY	DINING ROOM B.	L.	D.	WAITRESSES B.	L.	D.	HOUSEBOYS B.	L.	D.	REG. EMPLOYEES B.	L.	D.	GUESTS B.	L.	D.	TRAYS B.	L.	D.	TOTAL	TOTAL TO DATE
GRAND TOTAL																					

FIG. 5. *Form used to keep monthly meal count at the Quadrangle and Hamilton Halls, women's residence halls, Montana State College.*

The units reporting varied in the number of meals served per day from 261 to 7000. The number of full-time food service employees ranged from 2 to 150, and the extent to which student labor was used varied considerably. Types of units reporting were residence halls, college cafeterias, dining halls or commons, and student unions. In addition to serving three meals a day, some reported soda fountains, grills, and a catering service.

It has not been possible to summarize the information reported according to size of units, for questionnaires were sometimes answered on the basis of a single unit which was a part of a multi-

unit department and sometimes on the basis of the entire department.

Buying Procedures

Table 1 indicates that the two methods of buying most frequently used were from salesmen and by telephone. Canned goods, dairy products, and meats were most frequently bought by specification (Table 2). Quotations were most frequently requested before orders were placed for canned goods, fruits, vegetables, and meats.

Twenty-three indicated that they kept a record of orders placed. Four did not reply to this question. In some instances the record was kept in a daily order book. One explained that the type of information kept was item, amount, specification, and price.

TABLE 1

Method of buying used in college and university food service units

ME	UNITS
Bids	12
Contracts	10
Market trips	7
Salesmen	26
Telephone	25

Twenty-two kept a record of purchases. The types of purchase records varied. The report from one unit serving 1900 meals per day stated that two records of purchases were kept—by food on cards and by vendor in a ledger. Several indicated that their perpetual inventory provided a record of purchases. One said the purchase record was "handled in business office." One kept no record of purchases, and three did not indicate whether a purchase record was kept.

Receiving Methods

Twenty-five units checked deliveries when received against the quantity and quality ordered. One indicated that deliveries were "not consistently" checked. One did not report on this question. A variety of people were responsible for checking deliveries. In the larger units, the storeroom clerk or receiving clerk was usually responsible, while in the smaller units the storeroom clerk, head cook, or dietitian was usually responsible. Eighteen gave a copy of the purchase order to the person receiving merchandise. Nine units did not.

Meat was the food item most frequently checked by weight when received. Fruits and vegetables were also frequently reported to be checked in this way. In one unit, all items were weighed, and two checked the weight of all items ordered by weight. One unit weighed none of the food received.

Storeroom and Refrigerators

A full-time storeroom worker was employed in fifteen units; twelve had no such specialized position. Nine that did not have a full-time storeroom employee were units serving 1400 meals or less a day.

In twenty-two colleges and universities the storeroom was kept locked when the storeroom employee was not present; in four it was not. One did not report on this question. In most units only a few designated people had access to the storeroom.

Fifteen required requisitions for all issues from the storeroom; ten did not. Two did not reply to this question. Of the ten units which did not require requisitions, the majority kept some other records of issues, as for example all foods issued from the storeroom were recorded in a notebook.

TABLE 2

Institution buying according to specifications or requiring quotations for food purchased

ITEM	UNITS BUYING ITEM BY SPECIFICATION	UNITS REQUESTING QUOTATIONS
Canned goods	18	21
Dairy products	17	14
Fruits	11	21
Meats	16	19
Staples	13	16
Vegetables	11	20

Sixteen units kept the refrigerators locked when the person responsible for issues was not present. Eleven did not. Many more employees were reported to have access to the refrigerators than to the storeroom.

Eleven required requisitions for all issues from the refrigerators. Fifteen did not. One did not reply to this question. Explanations given by some who did not require requisitions indicated that anything in the refrigerators was considered issued and that foods stored in the refrigerator were recorded on the daily cost sheet as delivered.

Only three units reported the use of a meat tag system. These units served 2800, 3500, and 4000 meals per day.

Production and Service

Twenty-one units used standardized recipes. Five did not use them or did not use them for all preparation. One did not reply to this question. Twenty-six indicated that the quantities of food to be prepared were definitely stated.

Thirteen reported that they kept a record of leftovers.

In reply to a question in regard to plate waste, it was indicated that about half of the units checked plate waste, but very few kept a record of it.

TABLE 3

Frequency of physical inventory in the storeroom and refrigerators

FREQUENCY OF INVENTORY	UNITS CHECKING STOREROOM	UNITS CHECKING REFRIGERATORS
Daily	0	15
Tri-weekly	0	2
Weekly	1	0
Semi-monthly	1	0
Monthly	20	7
Quarterly	1	0
Semi-yearly	1	0
Yearly	2	1
Irregularly	1	0
Did not reply		2

Twenty-two checked garbage can contents. This check was made after each meal by eight units, daily by six, and at less frequent intervals by the others.

Accounting and Food Control

In twenty-one of these college and universities a perpetual inventory for all or part of their food supplies was maintained. People most frequently responsible for keeping the perpetual inventory included the dietitian, secretary, and storeroom clerk. Frequency of physical inventory in the storeroom and refrigerators is indicated in Table 3. In nineteen units someone on the executive or supervisory staff took the physical inventory or assisted with taking it.

Sixteen reported that they knew the portion cost of food served in advance of service; some of these, however, only determined approximate costs. Eight did not know the portion cost before service, and three did not reply to this question. Fifteen reported that cost of combinations were known in advance of service, although in some instances only approximately. Eight did not determine cost of combinations in advance. Four did not reply to this question.

TABLE 4

Frequency of determining costs

FREQUENCY OF DETERMINING COSTS	UNITS DETERMINING COST PER MEAL	UNITS DETERMINING FOOD COST PERCENTAGE	UNITS DETERMINING LABOR COST PERCENTAGE	UNITS DETERMINING OTHER COST PERCENTAGES
Daily	12	8	4	3
Weekly	1	1	2	1
Monthly	7	12	13	11
Bi-monthly	0	1	0	0
Irregularly	1	0	0	0
Did not reply	6*	5**	8	12

* Three of the units which did not reply to the question about cost per meal indicated that they determined the food cost percentage daily, and one determined the food cost percentage monthly.

** One unit that did not reply to the question about food cost percentage indicated that they determined the food cost per meal monthly, and two others determined the food cost per meal daily.

The frequency of determining the cost per meal, the food cost, labor cost, and other cost percentage in the twenty-seven units reporting is shown in Table 4.

Twelve replies stated that the accounting for their department was done by their department; seven stated that it was not. Five said that the food cost accounting or "some" of the accounting was done in their department. Three did not reply. Only two stated that the accounts and financial statements, when done by another department, were not available for the use of the food service department.

Value of Enriched Bread Questioned

Dr. Elmer V. McCollum of Johns Hopkins questioned the value of compulsory bread enrichment in the course of the Remsen Memorial Lecture delivered before the Maryland Section of the American Chemical Society this spring. He thinks that bread enrichment is not worth what it costs and that a bread more nutritious than, and just as palatable as the commercial product can be made by adding 6 per cent skim milk solids, small amounts of dried brewer's yeast, and the germs of wheat and corn which are now used for animal feed or, in the case of yeast, largely wasted.

He discussed the Recommended Daily Allowances of the Food and Nutrition Board, stating that first recommendations for thiamine, riboflavin, and niacin were greater than essential for normal health and that in the light of recent research work these recommendations have been scaled downward. However, those for thiamine and riboflavin are still much in excess of actual daily requirements for adults. In regard to niacin, it has become evident that it can be synthesized from the amino acid, tryptophan, thus lowering the dietary requirements.

Wartime studies, he pointed out, showed that the multivitamin supplements benefited industrial workers but little as compared to control groups who received no supplements and who showed no physical signs of malnutrition such as might have been expected on the basis of the daily need for additional nutrients as estimated at that time.—*New York Times, May 30, 1948.*

Determination of Accurate Unit Food Costs[1]

ANNA L. PRESTON

THE efficient operation of any food service unit requires careful checking on the part of the dietitian to see that the public is receiving the quality and quantity of food which can reasonably be expected for the prices charged. Herein lie important responsibilities of the dietitian, certainly those by which her patrons judge her.

Quantity and quality are major factors in controlling food costs. Raw food cost figures used by restaurant operators usually range from 35 to 45 per cent of the selling price, while in some other types of food services, the food cost may actually amount to 65 or 70 per cent. Increased food costs creep up in any number of ways. Simple and almost unnoticed changes in menus bring about definite increases. Raw food costs rise immediately with the buying of a better grade and/or cut of meat; with more extensive use of special sauces and the addition of garnishes; with extensive use of out-of-season and fancy packed foods; and with inclusion of more expensive desserts and "extras," such as mints and salted nuts. A rise in raw food costs results from lack of portion control, from every price increase, and from excessive food waste. Obviously, the reversal of these changes will reflect a decrease in food costs.

The dietitian must include in the plans for her establishment suitable methods for controlling the raw food cost if she expects to operate within her budget. In all studies and analyses of food cost controls, emphasis is placed on the following:

(a) Knowing food costs.
(b) Keeping accurate inventories of all foods purchased and used.
(c) Keeping accurate records of raw food costs.
(d) Careful menu planning.
(e) Using tested and standardized recipes.
(f) Serving standardized or measured portions.
(g) Buying by specification.
(h) Checking food wastes—preliminary preparation, cooking losses, and plate waste.
(i) Figuring labor costs.

Rapid calculation of raw food costs based on portion control makes correct menu pricing a possibility.

PORTION CONTROL

Standardizing or determining the size of portions will require experimentation. It will be necessary to consider the type of food service, average price charged, raw food cost, and taste of the average customer. This last item must be considered in relation to the size of portion the dietitian will offer, as she should please the patron yet not overfeed him.

A standard portion has been defined as one which satisfies the majority of patrons (1) whether the patrons be hungry Boy Scouts, finicky high school girls, industrial workers, vacationists, businessmen, country club members, college students, or others. Therefore, careful attention to customers' comments and plate waste will give the dietitian evidence as to the size of portions she can consider standard for her clientele.

Both raw and cooked foods must be considered in standardizing portions. It is relatively easy to standardize portions of uncooked foods or ready-to-use foods when such items have been purchased by count. However, with foods prepared in the kitchen which require a recipe, the first step in portion control lies in the recipe. This is the significance of a standardized recipe. A standardized recipe can be depended upon to yield a definite number of portions of a given size every time it is used only if the servings are measured. If standardized recipes and measured portions are used every day for every service, the exact food cost for every item is readily available. Standardized recipes are of inestimable worth if followed.

Standard portions are established in conjunction with standard recipes. Standardized portions must also be determined for those items not measured by ladle, scoop or spoon; for example, roast beef. Once a portion has been standardized, it becomes necessary to keep it uniform. Deviation from the standard means that the cost will immediately be out of proportion with the selling price.

The importance of getting an understanding on the part of the cooks concerning the number of servings expected from a recipe and how to get the

[1] Condensed from a thesis written in partial fulfillment of requirements for the degree of Master of Science in the College of Home Economics, the University of Tennessee, August, 1947.

required servings cannot be overemphasized. Giving the cooks standardized recipes and standardized equipment with which to obtain these portions will aid in achieving this goal. The dietitian may also find it necessary to demonstrate to the cooks exactly how a certain number of portions can be obtained. This is especially true in carving meats. Every cook should be taught to use scales. Every recipe must be tested and retested until proportions, seasoning, and manipulation give the quality desired. At the same time, the number and size of portions suited to the service can be determined.

Equally important is the training of employees responsible for doing the actual serving. Simple as it is to determine standard portions, getting portion control requires vigilance and patience. Food servers must be trained to serve the portion sizes which have been deemed sufficient. The human element is so variable that the dietitian can expect trouble along this line. Since cost per serving is accurately estimated only if the serving yield for a given quantity is always the same, it will be to the dietitian's advantage to provide equipment which she knows will measure servings, such as individual serving dishes, standard pans for which the number of servings has been established, and scales. She may establish the practice of using scoops, ladles or dippers, spoons, ramekins, and souffle cups. The dietitian will find a counting machine the best possible check on the size of portions in situations where the server must gauge the size of servings by the eye.

The dietitian should have accessible for ready reference, charts or compiled lists showing average servings; buying guides for count; pan sizes and yields; and other portion control information. All methods of portion control will not be adaptable to every situation. The actual procedure followed and the way in which it is formulated must be tailored to fit each situation.

MENU PRICING

Menu pricing is one of the most important factors in any food service. Menus that will be both suitable and profitable cannot be made in a hit-and-miss fashion. The best menus are made by the person who is on the alert for new ideas and, at the same time, makes use of the basic planning methods. The menu maker must have, first, a considerable amount of specific information and, second, she must keep the customer's point of view. She must not deviate from basic considerations in menu planning. Basically, Bryan, Macfarlane, and Hawkins (2) recommend the following:

(a) Know food values and how to plan nutritionally adequate menus.

(b) Know capacity of all departments and plan for ease of production.

(c) Obtain full value from all purchases and plan the menus to take care of all the food purchased.

(d) Know market conditions.

TABLE 1

*Unit cost of butter, margarine, lard, vegetable fats, and oils**

COST PER POUND (2 c)	UNIT COST**							
	1 oz. (2 Tbsp.)	2 oz. (¼ c.)	4 oz. (½ c.)	6 oz. (¾ c.)	8 oz. (1 c.)	10 oz. (1¼ c.)	12 oz. (1½ c.)	14 oz. (1¾ c.)
$0.10	$0.006	$0.0125	$0.025	$0.0375	$0.05	$0.0625	$0.075	$0.0875
.15	.009	.019	.0375	.056	.075	.094	.1125	.131
.20	.0125	.025	.05	.075	.10	.125	.15	.175
.25	.016	.031	.0625	.094	.125	.156	.1875	.219
.30	.019	.0375	.075	.1125	.15	.1875	.225	.2625
.35	.022	.044	.0875	.131	.175	.219	.2625	.306
.40	.025	.05	.10	.15	.20	.25	.30	.35
.45	.028	.056	.1125	.169	.225	.281	.3375	.394
.50	.031	.0625	.125	.1875	.25	.3125	.375	.4375
.55	.034	.069	.1375	.206	.275	.344	.4125	.481
.60	.0375	.075	.15	.225	.30	.375	.45	.525
.65	.041	.081	.1625	.244	.325	.406	.4875	.569
.70	.044	.0875	.175	.2625	.35	.4375	.525	.6125
.75	.047	.094	.1875	.281	.375	.469	.5625	.656
.80	.05	.10	.20	.30	.40	.50	.60	.70
.85	.053	.106	.2125	.319	.425	.531	.6375	.744
.90	.056	.1125	.225	.3375	.45	.5625	.675	.7875

* Data on measurement of fats and oils (3) is as follows: 1 lb. liquid fat, such as corn, cottonseed, olive, and peanut oils, measures 2 c.; 1 lb. solid fat, such as butter, lard, margarine, and rendered fat, measures 2 c.; 1 oz. measures 2 Tbsp.; and ¼ lb. bar butter measures ½ c.

** Figures also have been obtained on the unit cost of solid fat cut 32, 40, 48, 52, 56, 60, and 72 pieces to the pound.

(e) Follow the day's sales, the plate waste, and leftovers to know customer preferences.

(f) Plan menus in advance but with reasonable flexibility.

(g) Check continuously for variety but hold to favorite foods.

(h) Know food costs from recipe to buying, to selling, and through leftovers and waste.

These points are applicable to any type and size of food service, regardless of the operating budget, and are paramount in menu pricing. Because an item is low in cost is no reason for serving it unless it fits into good menu planning and is salable.

The efficient dietitian must be able to plan menus at different price levels. Planning of menus should be done from basic patterns which can be adapted to any type of food service. The dietitian may figure a minimum and a maximum average cost for each pattern, thus having available a basis for planning meals or quoting prices to be charged whether the menu is to be sold in a college residence hall, restaurant, cafeteria, hotel, or as a dinner for a special occasion.

The accepted method of calculating the selling price is one based on raw food cost. If a food service operates on a 40 per cent food cost, the total cost of food purchased is 40 per cent of the sales. This means that a meal or an item selling for a dollar has a raw food cost on the average of 40 cents. To maintain a 40 per cent food cost, the selling price of an item or a meal, on the average, should be two and one-half times the raw food cost. If the food service operates on a 50 per cent food cost, then the selling price should be twice the cost price.

It is not necessary that all items or meals in a food service be priced on the same raw food cost percentages. The cost of preparation differs for different foods, and this may be reflected in the selling price. Similarly, club or table d'hôte meals are priced lower, in relation to food cost, than à la carte items. Likewise, demand may influence the prices; some items can stand a higher percentage mark up than others, depending on customs, competition, and customers' preference. Sales volume may affect price setting. The dietitian must consider all these factors and attempt to adjust her prices to average the planned food cost percentages (2).

When a list of per serving food costs is available based on recipes in use, menu pricing is very simple. It is a matter of referring to previously figured, but up-to-date raw food costs and recording these on the menu. From this total, the selling price may be figured. Obviously, a new selling price cannot be set every time the raw food cost exceeds the limit, but the signal is there for a price change or a different selection for some menu item.

FIGURING RAW FOOD COSTS

Following the standardization of portions and as a basis for menu planning, the dietitian should figure the exact cost of all foods served. It is imperative that she know these food costs in order to balance expensive foods with cheaper ones and to determine the correct selling price for various items or meals.

Recipe cards and menu records should provide space for recording costs. Every dietitian needs to be "cost per serving" conscious. Table 1 and Table 2 serve to illustrate short-cut aids for figuring food costs. The writer has similar tables[2] for breads, dairy products, eggs, dried fruits, fresh fruits, fruit juices, meats, nuts, staples, vegetables, and other food products. Because of price fluctuations, it is necessary to check continuously and to refigure

[2] Complete thesis is on file at the University of Tennessee Library, Knoxville.

TABLE 2

*Unit cost of granulated sugar**

COST PER POUND (1 pt.)	UNIT COST				
	¼ lb. (1 c.)	⅛ lb. (½ c.)	2 oz. (¼ c.)	1 oz. (2 Tbsp.)	½ oz. (1 Tbsp.)
$0.05	$0.025	$0.0125	$0.0063	$0.0031	$0.0016
.055	.0275	.0138	.0069	.0034	.0017
.06	.03	.015	.0075	.0037	.0019
.065	.0325	.0163	.0081	.0041	.0021
.07	.035	.0175	.0088	.0043	.0022
.075	.0375	.0188	.0094	.0046	.0023
.08	.04	.02	.01	.005	.0025
.085	.0425	.0213	.0106	.0053	.0027
.09	.045	.0225	.0112	.0056	.0028
.095	.0475	.0238	.0118	.0059	.0030
.10	.05	.025	.0125	.0062	.0031

* This table may be used for other types of sugars by applying the following data (3): 1 lb. XX powdered sugar measures 2½ c.; 1 lb. XXXX confectioners sugar measures 3½ c.; and 1 lb. brown sugar (tightly packed) measures 2 c.

the cost of recipes from time to time. For this reason, the tables were made to cover a range of wholesale unit prices. The larger units are then broken down into smaller units. These tables were used as a part of a study in figuring the cost of one hundred and six items in use at the University of Tennessee Cafeteria. The writer was able to cut the time-consuming work of figuring costs as much as 50 per cent. The most helpful tables were those for staples. A considerable amount of time was saved in figuring costs of small amounts in recipes. These measures, though small, increase the total cost of a recipe and must be included.

The completed study includes a compilation of sixty-five separate tables which have been arranged so that they may be indexed and cross indexed for convenient usage. It was necessary to add several tables to the original group, as the study progressed. However, the inclusion of too many tables would curb their usefulness by interfering with ease in locating desired information.

A preliminary knowledge of cost per wholesale unit of each item and of market conditions is helpful in figuring costs from these tables. However, the tables may be used by anyone interested in figuring food costs.

REFERENCES

(1) WENZEL, G. L.: A new approach to standard portion control. Am. Restaurant Magazine 24: 32 (Jan.), 1940.
(2) BRYAN, M. DEG., MACFARLANE, A. M., AND HAWKINS, E. R.: Establishing and Operating a Restaurant. Washington: Govt. Printing Office, 1946.
(3) AMERICAN HOME ECONOMICS ASSOCIATION: Handbook of Food Preparation. Washington: American Home Economics Association, 1946.

Can Pure Amino Acids Replace Protein?

The answer to this question apparently depends largely upon the age of the animal used. For example, Cannon and his co-workers have used mature rats and have subjected them to a protein depletion. When these depleted animals are given a mixture of sixteen amino acids patterned after the composition of casein, the weight recovery is identical to that obtained when they are given a comparable amount of casein. In other words, these workers obtained no evidence for the need of an accessory factor to promote the utilization of these amino acids. Wooley, working with young mice, has found that when they are given a purified ration in which the nitrogen source is a supplemented casein hydrolysate, maximum growth is not obtained until he adds certain proteins or concentrates from these proteins. He has shown that the activity of different proteins is similar to their strepogenin content as determined with *L. casei*. In our laboratory we have worked with weanling rats and have obtained as high as 3 gm. growth per day by using a mixture of the ten essential amino acids supplemented with glutamic acid to provide a total nitrogen content equal to that supplied by 10 per cent of casein. The addition of low levels of intact proteins at the expense of glutamic acid gave only a slight increase in the rate of growth. It appears, therefore, that if intact casein contains a growth promoting factor for rats other than the essential amino acids, the concentration in casein is too low to satisfy the requirement. Rose has reported the existence of a growth factor for rats on casein with properties in common with strepogenin. In light of the work on amino acid imbalance, it is apparent that each amino acid must be supplied in optimum concentration before we can definitely settle the need for accessory peptide-containing compounds. In fact, the excretion of many of the amino acids in the urine is increased when proteins of poor quality are fed, which means that the amino acid pattern is not optimal for use as fed to rats and mice.

This leads us to the interesting observation that has recently been made regarding the rate of liberation of different amino acids from a given protein. For example, in casein the essential amino acids seem to be liberated at a more rapid rate than the non-essential. Cystine seems to be liberated at a very slow rate. Heat treatment of different proteins also alters the rates at which the amino acids are liberated. Perhaps there is a definite pattern of liberation which will give optimum utilization of the essential amino acids and which also influence the intestinal flora in such a way as to give better nutrition. In any case, the kind, the amount, and the rate at which amino acids are supplied to the human may have a very important bearing not only on adequate protein intake but on total nutrition. The availability of protein hydrolysates and free amino acids will do much to facilitate studies necessary to clarify this relationship and will be useful in supplementing diets shown to be inadequate on this basis.—*Abstracted from a paper given by C. A. Elvehjem, Professor of Biochemistry, University of Wisconsin, given before the American Pharmaceutical Manufacturers' Association in New York City, December 17, 1947.*

Refinements in Food Service Equipment

OWEN WEBBER

President, Owen Webber, Inc., New York City

IN MANY cases, the drawing up of specifications for the construction of kitchen equipment is restricted in scope due to the limited facilities of some manufacturers of kitchen equipment.

DEEP-DRAWN VS. FABRICATED UNITS

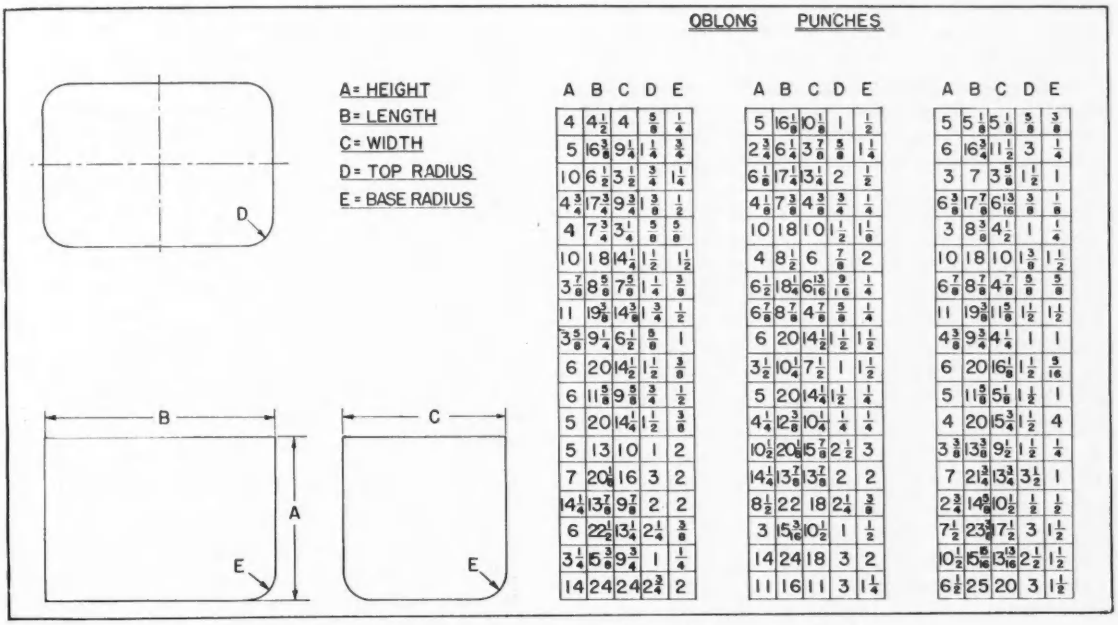
Utensil drawers, sinks of all sizes, and other similar shapes are ordinarily custom-fashioned from sheet materials. In the case of utensil drawers, this produces a square-cornered container which is not easy to clean and in many instances is rough in appearance. It is possible, however, to design and purchase deep-drawn drawers and sinks with cove corners which are good looking and readily cleaned. The term "deep-drawn" applies to the process of forming any specific sheet metal shape having a deep depression. In this process the flat sheet is placed in a power press having a capacity of many tons pressure—in some cases, exceeding 200 tons per operation. Dies to fit the shape desired are fashioned from hard steel, and one is located on the bottom of the press, and the other—the "punch"—attached to the top plate of the press. The sheet metal is positioned above the bottom die to permit it to slip down into the die, when pressure is applied. It has pre-arranged capacity for resistance so that the metal does not pucker and the sheet flows or moves evenly in the desired directions. In the case of stainless steel sheet, the grain structure becomes disturbed after drawing to a depth of 2 or 3 in. and requires annealing. In this process, it is placed in a high-temperature annealing furnace to be reconditioned, after which it is placed in an acid bath to remove the scale which forms in the annealing furnace. In a sink 14 in. deep and 24 in. square, with round corners, three stages of drawing with three annealing processes will ordinarily be required, the last stage forming the ultimate shape desired, free from distortion or puckering of the sheet metal. These deep-drawn sinks will have an irregular top flange which may project as much as 2 or 3 in. This is cut off in power shears to a regular straight line, usually to a point $\frac{3}{4}$ or 1 in. beyond the top curved edge of the sink side wall so that the flange is then square, true, and uniform.

The construction of such sinks is possible only when there are enough orders for sinks of identical sizes so that 500 or 1000 may be produced at a time. The stages of forming are then relatively quickly performed and the overall cost remains moderate. The savings are realized only in production of large quantities; thus, dietitians can, by planning collectively for a few standard sizes, help the manufacturer anticipate the demand and place in stock reasonable quantities. A list of available sizes of such deep-drawn sinks are given in Illustrations 1 and 2.

It is true that cove-cornered drawers and sinks can be made by hand, but the cost would not be justified. When this is done by hand, the stainless steel sheet is laid out in sections with various cuts and notches. These segments are assembled on a "jig" which holds everything in contiguous position, and all of the seams are then welded together by hand. The ridges formed by the welding need to be ground off—also a hand operation—and the entire unit is then polished. All of this involves a considerable amount of mechanic's time, hence the substantial cost. A deep-drawn stainless steel sink, made in quantity, actually costs about one-half that of a cove-cornered sink, custom-made by hand. It is even possible to obtain stainless steel, deep-drawn drawers at no increase in cost over one made by the regular folded assembly method using stainless sheet steel.

Illustration 3 shows how a utensil drawer, forming part of an enclosed substructure, can be made with a deep-drawn body proper. Note the location of extension arm slides under the bottom of the drawer instead of at the sides. These bottom-placed extension arm slides are equipped with rubber back stops which facilitate quiet operation, and the drawer front is of box type and is insulated, the depth of the boxing being sufficient to permit the reception of a depressed drawer pull.

Deep-drawn sinks can also be used with flanged tops. The edges are squared off by shears and are tackwelded to a similarly dimensioned aperture in the table top. Then the joint is welded in the usual manner, ground off, and polished. This

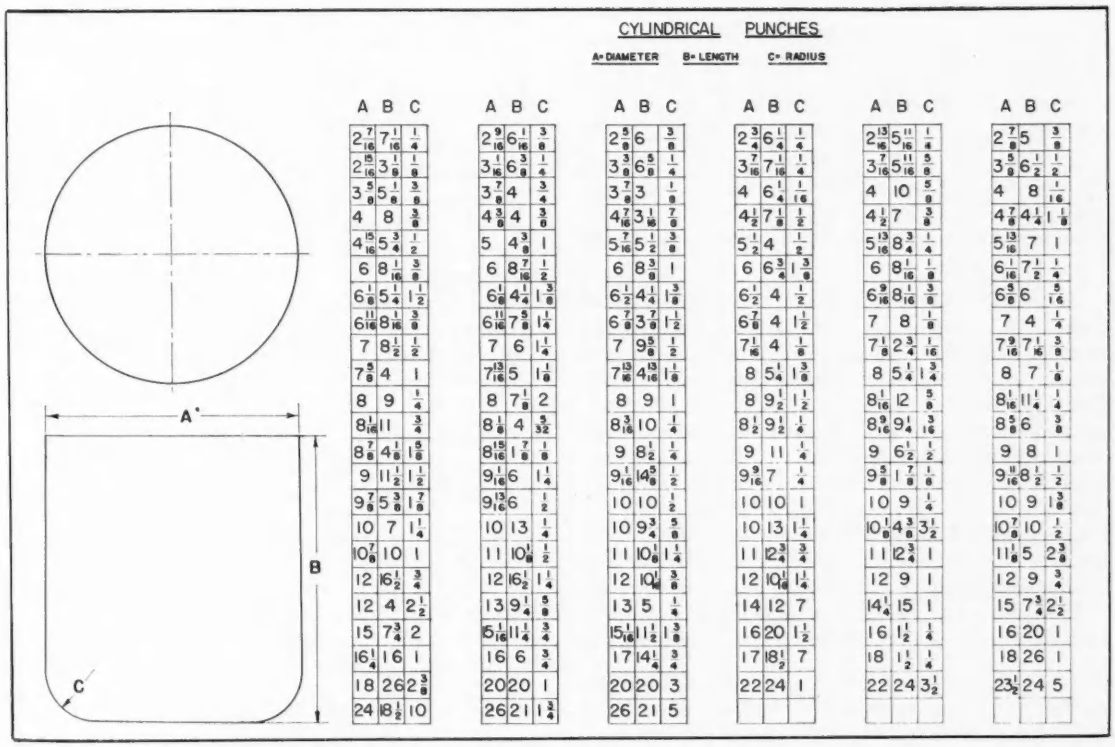


A	B	C	D	E
4	4 1/2	4	5/8	1/4
5	16 3/8	9 1/4	1/4	3/4
10	6 1/2	3 1/2	3/4	1 1/4
4 3/4	17 3/4	9 3/4	3/8	1/2
4	7 3/4	3 1/4	5/8	5/8
10	18	14 1/4	1 1/2	1 1/2
3 7/8	8 5/8	7 5/8	1/4	3/8
11	19 3/8	14 3/8	1 3/4	1/2
3 5/8	9 1/4	6 1/2	5/8	1
6	20	14 1/2	1 1/2	3/8
6	11 5/8	9 5/8	3/4	1/2
5	20	14 1/4	1 1/2	3/8
5	13	10	1	2
7	20 1/8	16	3	2
14 1/4	13 7/8	9 7/8	2	2
6	22 1/2	13 1/4	2 1/4	3/8
3 1/4	15 3/8	9 3/4	1	1/4
14	24	24	2 3/4	2

A	B	C	D	E
5	16 1/8	10 1/8	1	1/2
2 3/4	6 1/4	3 7/8	5/8	1 1/4
6 1/8	17 1/4	3 1/4	2	1/2
4 1/8	7 3/8	4 3/8	3/4	1/4
10	18	10	1 1/2	1 1/8
4	8 1/2	6	7/8	2
6 1/2	18 1/4	6 13/16	9/16	1/4
6 7/8	8 7/8	4 7/8	5/8	1/4
6	20	14 1/2	1 1/2	1 1/2
3 1/2	10 1/4	7 1/2	1	1 1/2
5	20	14 1/4	1 1/2	1/4
4 1/4	12 3/8	10 1/4	1/4	1/4
10 1/2	20 1/8	5 7/8	2 1/2	3
14 1/4	13 7/8	13 7/8	2	2
8 1/2	22	18	2 1/4	3/8
3	15 3/16	10 1/2	1	1/2
14	24	18	3	2
11	16	11	3	1 1/4

A	B	C	D	E
5	5 1/8	5 1/8	5/8	3/8
6	16 3/4	11 1/2	3	1/4
3	7	3 5/8	1 1/2	1
6 3/8	17 7/8	6 13/16	3/8	1/8
3	8 3/8	4 1/2	1	1/4
10	18	10	1 3/8	1 1/2
6 7/8	8 7/8	4 7/8	5/8	5/8
11	19 3/8	11 5/8	1 1/2	1 1/2
4 3/8	9 3/4	4 1/4	1	1
6	20	16 1/8	1 1/2	5/16
5	11 5/8	5 1/8	1 1/2	1
4	20	15 3/4	1 1/2	4
3 3/8	13 3/8	9 1/2	1 1/2	1/4
7	21 3/4	13 3/4	3 1/2	1
2 3/4	14 3/8	10 1/2	1/2	1/2
7 1/2	23 3/8	7 1/2	3	1 1/2
10 1/2	15 15/16	13 13/16	2 1/2	1 1/2
6 1/2	25	20	3	1 1/2

ILLUSTRATION 1. *Partial list of deep-drawn sizes and shapes now available.*



A	B	C
2 7/16	7 1/16	1/4
2 15/16	3 1/8	1/8
3 5/8	5 1/8	3/8
4	8	3/8
4 15/16	5 3/4	1/2
6	8 1/16	3/8
6 1/8	5 1/4	1 1/2
6 11/16	8 1/16	3/8
7	8 1/2	1/2
7 5/8	4	1
8	9	1/4
8 1/16	11	3/4
8 7/8	4 1/8	1 5/8
9	11 1/2	1 1/2
9 7/8	5 3/8	1 7/8
10	7	1 1/4
10 7/8	10	1
12	16 1/2	3/4
12	4	2 1/2
15	7 3/4	2
16 1/4	16	1
18	26	2 3/8
24	18 1/2	10

A	B	C
2 9/16	6 1/16	3/8
3 1/16	6 3/4	1/4
3 7/8	4	3/4
4 3/8	4	3/8
5	4 3/8	1
6	8 7/16	1/2
6 1/8	4 1/4	1 3/8
6 11/16	7 5/8	1 1/4
7	6	1 1/4
7 13/16	5	1 1/8
8	7 1/8	2
8 1/8	4	5/32
8 15/16	1 7/8	1/8
9 1/16	6	1 1/4
9 13/16	6	1/2
10	13	1/4
11	10 1/8	1/2
12	16 1/2	1 1/4
13	9 1/4	5/8
15 1/16	11 1/4	3/4
16	6	3/4
20	20	1
26	21	1 3/4

A	B	C
2 5/8	6	3/8
3 3/8	6 5/8	1/4
3 7/8	3	1/8
4 7/16	3 1/16	7/8
5 7/16	5 1/2	3/8
6	8 3/8	1
6 1/2	4 1/4	1 3/8
6 7/8	3 7/8	1 1/2
7	9 5/8	1/2
7 15/16	4 13/16	1/8
8	9	1
8 3/16	10	1/4
9	8 1/2	1/4
9 1/16	14 5/8	1/2
10	10	1/2
10	9 3/4	5/8
11	10 1/8	1 1/4
12	10 1/8	3/8
13	5	1/4
15 1/16	11 1/2	1 3/8
17	14 1/4	3/4
20	20	3
26	21	5

A	B	C
2 3/4	6 1/4	1/4
3 7/16	7 1/16	1/4
4	6 1/4	1/16
4 1/2	7 1/8	1/2
5 1/2	4	1/2
6	6 3/4	1 3/8
6 1/2	4	1/2
6 7/8	4	1 1/2
7 1/16	4	1/8
8	5 1/4	1 3/8
8	9 1/2	1 1/2
8 1/2	9 1/2	1/4
9	11	1/4
9 9/16	7	1/4
10	10	1
10	13	1 1/4
11	12 3/4	3/4
12	10 1/16	1 1/4
14	12	7
16	20	1 1/2
17	18 1/2	7
22	24	1

A	B	C
2 13/16	5 11/16	1/4
3 7/16	5 11/16	5/8
4	10	5/8
4 1/2	7	3/8
5 13/16	8 3/4	1/4
6	8 1/16	1/8
6 9/16	8 1/16	3/8
7	8	1/8
7 1/8	2 3/4	1/16
8	5 1/4	1 3/4
8 1/16	12	5/8
8 9/16	9 1/4	3/16
9	6 1/2	1/2
9 5/8	1 7/8	1/8
10	9	1/4
10 1/8	4 3/8	3 1/2
11	12 3/4	1
12	9	1
14 1/4	15	1
16	1 1/2	1/4
18	1 1/2	1/4
22	24	3 1/2

A	B	C
2 7/8	5	3/8
3 5/8	6 1/2	1/2
4	8	1/16
4 7/8	4 1/4	1 1/8
5 13/16	7	1
6 1/16	7 1/2	1/4
6 5/8	6	5/16
7	4	1/4
7 9/16	7 1/16	3/8
8	7	1/8
8 1/16	11 1/4	1/4
8 5/8	6	3/8
9	8	1
9 11/16	8 1/2	1/2
10	9	1 3/8
10 7/8	10	1/2
11 1/8	5	2 3/8
12	9	3/4
15	7 3/4	2 1/2
16	20	1
18	26	1
23 1/2	24	5

ILLUSTRATION 2. *A second list of deep-drawn sizes and shapes which may be obtained.*

means that the welding and grinding takes place on a flat surface where the operation is simple, and the easy radius[1] of the top edge of the sink is provided by shaping in the press. Kitchens so equipped afford a uniformity of appearance, and the introduction of these mechanically-produced pieces of equipment suggests an appreciable saving.

PLASTIC FILM PROTECTION OF SURFACES

Stainless steel sheets can be purchased by the kitchen equipment manufacturer in polished form direct from the mill. Polishing so done is uniform, regular, and satisfactory. Although some manufacturers buy unpolished sheets and, after fabrication, polish the equipment by hand-manipulated means, such methods do not give the finish of a mill polish.

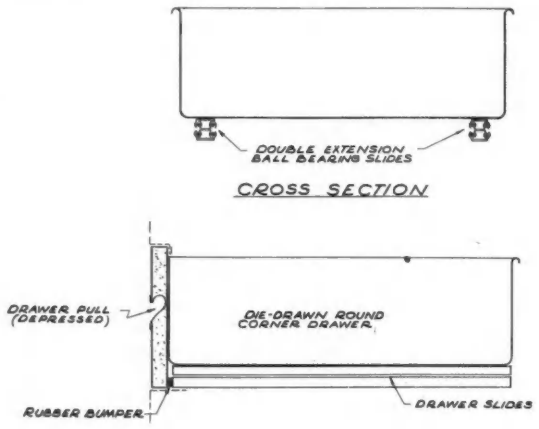


ILLUSTRATION 3. *Shape of deep-drawn drawer, showing double-extension, ball bearing slides, and depressed drawer pull.*

If the fabrication is carried out carefully, most items of kitchen equipment made from pre-polished steel sheets can be made up retaining the original polish. Any area requiring welding can be confined by masking the surrounding metal, thus preventing destruction of the polish at any point except where the welding is to be done. The welding can then be performed with satisfactory results. To accomplish this masking, the polished sheets are sprayed with a plastic "envelope" or film, which protects the surface, if reasonably careful handling is exercised during the stages of shaping and forming.

These coatings, which are applied 2 to 3 mils (1 mil = $\frac{1}{1000}$ in.) in thickness, have a synthetic resin base dissolved in a volatile, fast drying solvent. The cohesive strength of the applied material is much greater than its adhesion to metal, and a film results which readily strips off when the work on the unit is completed, thus permitting full inspection. Prior to shipping, the accepted equipment is again sprayed with similar material and is thus protected from scratching and marring during installation operations.

This provision of a plastic "envelope" is especially desirable for stainless steel fixtures which are installed in a kitchen where tile is used in the building structure. Quarry tile floors, for instance, are usually cleaned by the building contractor with muriatic acid, the fumes of which attack stainless steel very promptly, producing appreciable rust. With the plastic covering, the surfaces of the equipment are protected.

QUICK-OPENING SINK WASTE OUTLETS

A stainless steel sink justifies the provision of a quick-opening, lever-handled waste valve, instead of a plug and chain. Several of the progressive kitchen equipment manufacturers provide this feature when specified, and the additional expense is well justified.

BY-PASS STEAM INJECTORS

The application of a steam injector to a pot sink or a similar unit is a useful addition for the temperature of the water can then be stepped up when the temperature of the building's water supply should drop below normal. However, what is known as a "by-pass" injector should be used, for the ordinary type of steam injector, which consists of a muffler-headed steam pipe within the sink itself, is hard to keep clean and is usually noisy in operation. With a "by-pass" injector, the passage of the steam through the small nozzle at the entry of the injector pulls the water from the sink through the injector and pushes it out through the back connection of the injector into the sink. Illustration 4 shows one of these by-pass injectors in position.

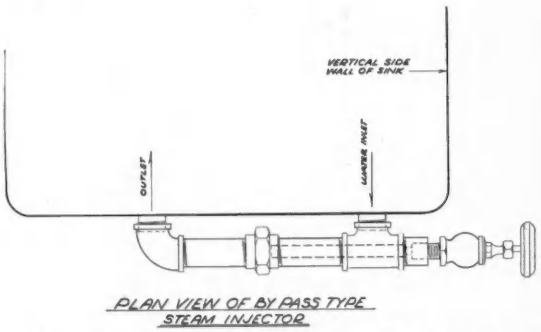


ILLUSTRATION 4. *Cut-away drawing of by-pass type steam injector.*

[1] The term "easy radius" usually applies to an internal or external corner of a metal work top and means that a corner which is die-pressed would have a generous large curve of 2 or 3 in., instead of being restricted to a sharp or small curve of $\frac{1}{2}$ or $\frac{3}{4}$ in., as is sometimes the case.

INSULATED FIXTURES

Many factors contribute to orderly kitchen operation. Noisy and excessively hot kitchens are two factors which can lower the efficiency of the operators. To cut down noise and heat, all warmers should be insulated with doors constructed for positive closing and reasonably silent operation.

Illustration 5 shows a marine-type combination door pull and latch, which was originally designed to keep the doors fully closed on shipboard. The bottom of the doors engage a self-cleaning stainless steel guide. Note the rubber stops inserted at the door framing and the friction lugs on the face of the lower corners of the doors engaging the guides to eliminate rattle. By using such doors on warmers, the doors will remain fully closed and the heat will be retained in the warmer.

UPSTANDING EDGES FOR WORK TABLES

On board ship the work edges of kitchen tables, which are termed "dressers," are upstanding as shown in Illustration 6. This edge confines anything resting on the top of the table and prevents it from falling. This design has been tried out in installations on land, and it has been found that for a cook's table in front of the ranges, a table top so shaped can prevent various litter or spilled fluids from falling in the work aisle. The upstanding edge, being shaped to an easy radius, does not work a hardship when it is necessary to slide utensils or pans off the top of the table, because the proportions are such that these items ride over the edge if deliberately pushed or pulled.

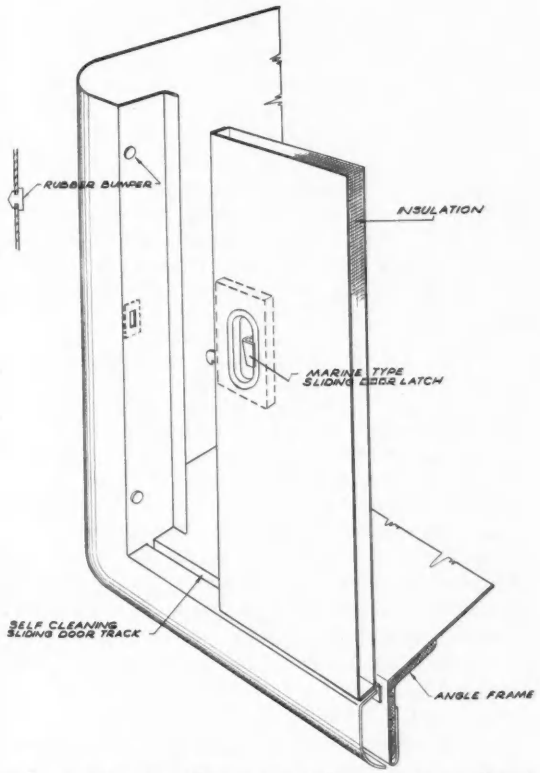


ILLUSTRATION 5. *Marine-type combination door pull and latch, designed to cut down noise and stay closed.*

REVISED WORKING HEIGHTS FOR WORK TOPS

Certain dimensions in kitchen equipment design, established years ago, are considered standard. However, some should be subject to revision. For example, 34 in. is generally stipulated as the height above the floor for work tops. Some authorities today consider that this should be increased to 38 in. to afford a more desirable working posture which would be less tiring and more convenient for the worker. The additional vertical capacity of the substructures would then permit mounting the equipment on 10-in. legs. Such an alteration would contribute to the ease of cleaning floors, and the actual substructures, especially sections devoted to undercounter refrigerators, then would assume useful stowage proportions. This elevation in height for work areas involving sinks would put the sink in a position to be used to greater advantage, especially if the sink depth for general purpose usage were reduced from the conventional 14 in. to 10 or 12 in.

PROPER PLACEMENT OF EQUIPMENT LEGS

Kitchen equipment is often mounted on pipe legs, the number and position of which are often not given adequate consideration in designing. The quantity of these legs in many kitchens resembles a grove of saplings. Not only is it difficult to clean such equipment and the floor, but the undertable area or substructure in many instances is so

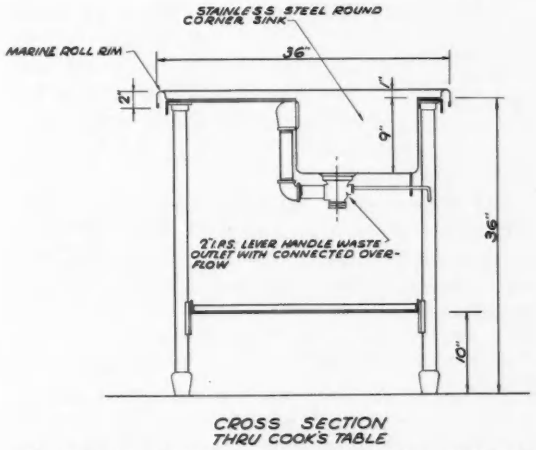


ILLUSTRATION 6. *Cook's table, with stainless steel sink, showing marine roll rim, and lever-handled waste outlet.*

broken up that much of the utility of the free area is sacrificed.

All work tables and sinks contiguous to walls require no legs at all. They should be mounted on what are known as "chair carriers" or else by the use of wall brackets. In most instances, permanently positioned work tables need pipe legs on one side only, with the work top and shelves mounted on cantilever brackets secured to this single rank of legs. Under shelves can be mounted on simple brackets toggled to the wall. Portable tier shelves on ball bearing wheels can be easily locked in place and just as simply moved out and reparked at will. In the interim, such units have become bulk carriers, eliminating the carrying of many things. Some shelves are totally unnecessary, having been provided as a means to tie in and also brace the pipe legs.

We recently designed a table for soiled dishes of the duplex type— where the people scraping dishes work on each side facing each other. This unit is 6 ft. 3 in. in width and 18 ft. 6 in. in length, and it is most securely mounted on only eight pipe legs. The dish table is provided with a horizontal framing of simple metal, channel-design, welded assembly, affording rigidity to the top. It is then secured to the stainless steel pipe legs located in two rows in the middle area. All legs are set in from the outside table perimeter 25 in., which provides a free space on all sides devoid of legs.

The pipe legs are firmly secured both to the table and to the concrete floor. Some conception of the working load involved can be realized when you visualize 1000 dishes moving at any one time, two pre-wash hosing stations requiring a grated sink trough 5 ft. long, 1 ft. 8 in. wide, and 10 in. deep, and possibly 16 dish baskets all simultaneously imposing a live load, together with the sway resistance factor of six energetic workers.

The dish table is provided with a series of parallel, upstanding flutings $\frac{3}{16}$ in. high, pressed in the solid metal, running from end to end. The dish baskets ride on these integral ribs with a minimum of frictional resistance, effortlessly and silently since the main area of the table top is not contacted by the baskets.

The utilization of the undertable area is ideal. The table is 38 in. high, instead of 34 in. Portable garbage cans on dollies and tiers of stacked dish racks, also on dollies, are all parked and manipulated at will.

STOWAGE OF CHINA AND GLASS

The operation of any kitchen and associated food service units can be rendered more efficient if the types, sizes, and quantities of the china, glass, and utensils are listed accurately before the drawings for equipment are made. Specific items in actual service (apart from those placed in "reserve stores") can then be assigned permanent storage places in the fixtures, and the equipment can be designed to accommodate them properly. This may involve the depth and clearance of shelves, clear width of door openings, and so on.

With such planning, it may be possible to arrange to place china and glass in a spot convenient for use in wire creels, wire baskets, and in some instances in conjunction with Lowerators. Cups and saucers can issue at coffee service stations, either from Lowerators built into the substructures or a series of wire baskets or trays placed in tiers under the top of the urn stand. Such a series of wire baskets could be planned to operate in basket cradles or frames operating on ball bearing extension arm slides. The baskets or trays could be pulled out and drawers and cups would immediately become accessible to the person serving coffee. Such a plan would have many advantages over the practice of placing cups in piles on the shelves in the urn stand underneath the urns. Stacking of cups does not make economical use of the space available, and furthermore, the cups sometimes fall and break due to the inconvenience of the method of stowage. Such equipment has the additional advantage that clean dishes can return from the dishwashing department in these baskets, safely, quickly, and conveniently.

However, unless this planning is done at the time of the actual designing of the kitchen, no such nicety of placement and operation can be fully provided later. The act of merely enclosing certain substructures for storage without this detailed calculation and planning often results in the sacrificing of desirable and convenient facilities. Also, inadequacies of space may develop or more enclosed fixtures may be provided than necessary at unwarranted additional cost and may at the same time add to the cleaning problem.

SUMMARY

Putting into practice all of the foregoing points will substantially add to the acceptability of the work done in an institutional kitchen. In the long run, such refinements can be obtained at little or no additional cost, and in some instances, at a reduction in present outlay. Kitchen requirements for sinks and drawers can be held to a minimum of sizes by collective planning. In planning for equipment installations, it should be suggested to local representatives of kitchen equipment manufacturers that they contact established firms which have the dies necessary to "draw" a variety of shapes which are being considered for use. The manufacturer will find, if he takes into consideration the total annual hospital requirements, that the manufacture of such shapes in presses will justify the expense of dies.

Total, Dehydro, and Reduced Ascorbic Acid in Cantaloupes[1]

SHIH DZUNG CHEN, KATHERINE J. ELLIOTT, and CECILIA SCHUCK

Department of Nutrition, Purdue University, Lafayette, Indiana

MOST OF the published values for the chemically determined ascorbic acid content of foods are based upon the indophenol reaction and, therefore, are for reduced ascorbic acid only. Likewise, losses due to various causes have in the past usually represented decreases in reduced ascorbic acid, which have not always been true losses, since conversion into dehydroascorbic acid may have accounted for a part or even all of the disappearance of the reduced ascorbic acid.

With the introduction by Roe and Kuether in 1942 (1) of the 2,4-dinitrophenylhydrazine method and its application by Roe and Oesterling (2) to the analysis of plant tissue, a satisfactory method became available for the determination of total and dehydroascorbic acid. The 2,4-dinitrophenylhydrazine method has recently been used by McMillan and Todhunter (3) and by Wilcox and Nielson (4) in investigating changes in the ascorbic acid content of cabbage on standing and under different methods of preparation. These workers found that decreases in the reduced ascorbic acid of the cabbage could be accounted for largely by conversion to dehydroascorbic acid.

Relatively few studies have been made of the ascorbic acid content of cantaloupes with which the present investigation is concerned. The studies reported have employed either the bioassay or indophenol method, and information on the dehydroascorbic acid content is lacking. Since the dehydro form is now recognized to have biologic activity, it becomes important that knowledge of its occurrence in foods under different conditions be extended.

This study was undertaken to determine the amount of total, dehydro, and reduced ascorbic acid present in freshly cut cantaloupes and in cantaloupes held under different conditions after cutting.

EXPERIMENTAL PROCEDURE

Five lots, totaling thirty-three cantaloupes, purchased from local stores between July and November, were analyzed.

Samples for analysis were obtained by cutting the melons crosswise through the center with a plastic knife and removing a circle. An analysis was made on each melon immediately after cutting and after holding cut portions for 24 hr. Halves of melons wrapped in waxed paper were stored in the refrigerator and also held at room temperature. In other instances, melons were stored unwrapped in approximately half-size portions and after cutting into cubes.

Twenty-five-gm. samples were prepared for analysis by blending with 300 cc. of a solution containing 5 per cent metaphosphoric acid and 3 per cent glacial acetic acid in a Waring Blendor. The total and dehydroascorbic acid were determined by the 2,4-dinitrophenylhydrazine method described by Roe and Oesterling (2). Readings were made in an Evelyn photoelectric colorimeter, and the ascorbic acid content of the samples was calculated from galvanometer readings by use of a calibration curve prepared according to the directions of Roe and Kuether (5). Reduced ascorbic acid was obtained by difference with lots of melons obtained from July through October. For the lot purchased in November, the reduced ascorbic acid was determined by analysis as a check on values obtained by difference. The indophenol-xylene (6) procedure was used for the analytical determinations.

RESULTS AND DISCUSSION

The findings of the study are recorded in Tables 1 and 2.

The average total ascorbic acid content of the freshly cut cantaloupes purchased in July, August, and September showed little variation, the range falling between 26.0 and 27.9 mg. per 100 gm. The cantaloupes purchased in October were somewhat lower, with an average of 19.6 mg. per 100 gm. The July-to-October melons were products of melon-growing sections of the Midwest. The cantaloupes purchased in November were California products for

[1] Received for publication March 31, 1948.

TABLE 1

*Average total, dehydro, and reduced ascorbic acid of freshly cut cantaloupes and after holding for 24 hr. under different conditions**

CONDITION OF SAMPLE	MONTH	NUMBER OF CANTALOUPES	AVERAGE TOTAL ASCORBIC ACID	AVERAGE DEHYDROASCORBIC ACID	AVERAGE REDUCED ASCORBIC ACID
			mg./100 gm.	*mg./100 gm.*	*mg./100 gm.*
Freshly cut	July	8	27.9		
	August	9	26.0	3.6	22.4
	September	4	27.3	6.6	20.8
	October	7	19.6	4.0	15.6
Stored in refrigerator					
Wrapped halves	August	9	23.0	5.1	18.0
	September	4	30.8	8.5	22.3
	October	7	23.1	5.5	17.6
Unwrapped halves	September	4	36.3	9.2	27.1
Cut into cubes	October	7	20.9	8.1	12.8
Stored at room temperature	August	9	24.9	10.1	14.3

* All melons grown in the Midwest.

which the total average ascorbic acid of the freshly cut melons was 30.6 mg., with a range of 24.1 to 37.3 mg. per 100 gm. The dehydroascorbic acid represented 14, 24, and 20 per cent of the total ascorbic acid of the freshly cut August, September, and October melons respectively and 35 per cent of the November melons.

The dehydroascorbic acid increased under all conditions of holding, the increase being greatest in cantaloupes held at room temperature. For these melons, the dehydroascorbic acid increased from 14 per cent of the total ascorbic acid to 43 per cent at the end of 24 hr.

Increases in dehydroascorbic acid were usually small in the refrigerated cantaloupes, both wrapped and unwrapped, with the exception of the samples that were cut into cubes. The latter showed a change in dehydroascorbic acid from 20 per cent of the total immediately after cutting to 39 per cent at the end of 24 hr.

For the melons studied in August, the increase in dehydroascorbic acid was accompanied by an appreciable decrease in reduced ascorbic acid, with only a small decrease in total. In September, there was some increase in reduced ascorbic acid as well as dehydro, with a consequent increase in total, in the refrigerated cantaloupes. This was also true for the refrigerated halves of cantaloupes assayed in October. For those cut into cubes, there was a loss in reduced ascorbic acid, but with the gain in dehydro, the total ascorbic acid remained practically unchanged.

In the study made in November, in which dehydroascorbic acid was determined both by difference and by analysis, good agreement was obtained by the two methods. Small increases were found in both the dehydro and reduced ascorbic acid of the refrigerated cantaloupes at the end of 24 hr., with little difference between the wrapped and unwrapped halves.

TABLE 2

*Total, dehydro, and reduced ascorbic acid of freshly cut and refrigerated cantaloupes as determined by difference and by analysis**

CONDITION OF SAMPLE	TOTAL ASCORBIC ACID	DEHYDROASCORBIC ACID	REDUCED ASCORBIC ACID	
			By difference	By analysis
	mg./100 gm.	*mg./100 gm.*	*mg./100 gm.*	*mg./100 gm.*
Freshly cut				
Sample No. 1	33.0	8.8	24.2	21.6
Sample No. 2	37.3	14.1	23.1	19.5
Sample No. 3	26.5	10.8	15.7	16.4
Sample No. 4	32.1	13.7	18.4	16.5
Sample No. 5	24.1	11.6	12.5	10.6
Average	30.6	11.8	18.8	16.8
Stored in refrigerator				
Wrapped halves				
Sample No. 1	36.6	9.6	27.0	26.8
Sample No. 2	42.6	17.6	25.0	23.7
Sample No. 3	28.4	11.1	16.4	19.3
Sample No. 4	34.4	15.6	18.8	20.8
Sample No. 5	34.2	13.9	20.3	20.6
Average	35.3	13.5	21.7	22.2
Stored in refrigerator				
Unwrapped halves				
Sample No. 1	41.0	11.0	30.1	30.2
Sample No. 2	47.3	17.6	29.7	31.6
Sample No. 3	31.5	11.6	19.9	18.1
Sample No. 4	39.1	18.5	20.6	20.8
Sample No. 5	33.6	14.5	19.0	20.2
Average	38.5	14.6	23.8	24.2

* All melons grown in California; purchased in November.

The increases in both dehydro and reduced ascorbic acid, resulting in a larger amount of total ascorbic acid in some of the refrigerated cantaloupes suggest that either synthesis occurred or the analytical methods used were measuring in addition to the ascorbic acid other substances formed during the storage period. The former possibility has been suggested by the work of Prokoshev (7) with potatoes and West and Zilva (8) with apples.

SUMMARY

The total, dehydro, and reduced ascorbic acid of thirty-three cantaloupes was determined immedi-

TABLE 3

*Total, dehydro, and reduced ascorbic acid of freshly cut and refrigerated cantaloupes as determined by difference and by analysis**

CONDITION OF SAMPLE	TOTAL ASCORBIC ACID		DEHYDROASCORBIC ACID		REDUCED ASCORBIC ACID			
					By difference		By analysis	
	Range	Average**	Range	Average**	Range	Average**	Range	Average**
	mg./100 gm.	*mg./100 gm.*	*mg./100 gm.*	*mg./100 gm.*	*mg./100 gm.*	*mg./100 gm.*	*mg./100 gm.*	*mg./100 gm.*
Freshly cut	24.1–37.3	30.6	8.8–14.1	11.8	12.5–24.2	18.8	10.6–21.6	16.8
Stored in refrigerator								
Wrapped halves	28.4–42.6	35.3	9.6–17.6	13.5	16.4–27.0	21.7	19.3–26.8	22.2
Unwrapped halves	31.5–47.3	38.5	11.0–18.5	14.6	19.0–30.1	23.8	18.1–31.6	24.2

* All melons grown in California; purchased in November.

** Average of five samples.

ately after cutting and after holding for 24 hr. under different conditions.

Dehydroascorbic acid was found to increase in both refrigerated and non-refrigerated samples, the increase being greater for the latter.

Melons cut into small pieces and stored in the refrigerator showed a greater increase in dehydroascorbic acid than melons stored as cut halves. Little difference was observed in wrapped and unwrapped refrigerated halves.

In the cantaloupes held at room temperature and those stored in the refrigerator in small pieces, the increase in dehydroascorbic acid was accompanied by a decrease in reduced ascorbic acid. In the former, there was a small loss in total ascorbic acid value, but the total value was practically unchanged for the latter.

Increases in both dehydro and reduced ascorbic acid were found to occur frequently, which suggested that either some synthesis was taking place or that the analytical method used was measuring in addition to ascorbic acid other substances formed during the storage period.

REFERENCES

(1) Roe, J. H., and Kuether, C. A.: A color reaction for dehydroascorbic acid useful in the determination of vitamin C. Science 95: 77, 1942.

(2) Roe, J. H., and Oesterling, M. J.: The determination of dehydroascorbic acid and ascorbic acid in plant tissues by the 2,4-dinitrophenylhydrazine method. J. Biol. Chem. 152: 511, 1944.

(3) McMillan, T. J., and Todhunter, E. N.: Dehydroascorbic acid in cabbage. Science 103: 196, 1946.

(4) Wilcox, E. B., and Nielson, A. M.: Effect of quantity preparation on the ascorbic acid content of cabbage salad. J. Am. Dietet. A. 23: 223, 1947.

(5) Roe, J. H., and Kuether, C. A.: The determination of ascorbic acid in whole blood and urine through the 2,4-dinitrophenylhydrazine derivative of dehydroascorbic acid. J. Biol. Chem. 147: 399, 1943.

(6) Robinson, W. B., and Stotz, E.: The indophenol-xylene extraction method for ascorbic acid and modification for interfering substances. J. Biol. Chem. 160: 217, 1945.

(7) Prokoshev, S. M.: Traumatic formation of vitamin C in sliced potatoes. Biokhimiya 9: 36, 1944; Chem. Abstr. 38: 5607, 1944.

(8) West, C., and Zilva, S. S.: Synthesis of vitamin C in stored apples. Biochem. J. 38: 105, 1944.

Calcium-Enriched Meat

McQuarrie and associates of the University of Minnesota compared the nutritional value of calcium-enriched ground beef with that of milk from the point of view of utilization of calcium, phosphorus, and protein. By various additions the two diets were adjusted to contain the same quantities of protein, fat, carbohydrate, water, calcium, phosphorus, and vitamins. Young litter-mate rats about thirty-five days of age were divided into two dietary groups, one receiving milk, the other cooked lean meat enriched with calcium gluconate and phosphates. The animals were maintained on these diets for six weeks. At the end of this period the animals were decapitated 24 hr. after all food had been removed from their cages. Pooled blood samples were analyzed for calcium, phosphorus, and serum protein. The femurs of half of the rats were weighed and analyzed. The entire carcass of each of the remaining rats was analyzed for calcium, phosphorus, and total fat-free dry weight. The serum protein, calcium, and phosphorus levels at the end of the experiment did not show significant differences attributable to differences in diet. All values were well within normal range. The data thus indicate clearly that the calcium-supplemented meat diet to supply calcium, phosphorus, and protein was as good as milk. This conclusion was confirmed on two hospital patients, ages twelve and fourteen years, who were placed on a milk-containing diet for fifteen days followed by a calcium-enriched meat diet for a similar period of time.—*From Current Comment, J.A.M.A. 137: 1469 (August 14), 1948.*

Effect of Canning on the Ascorbic Acid and Thiamine in Vegetables[1]

C. L. BEDFORD and MARGARET A. McGREGOR[2]

Divisions of Horticulture and Home Economics, Agricultural Experiment Station, State College of Washington, Pullman

SEVERAL studies have been made on vitamin retentions in home-canned vegetables. Few, however, have been directly concerned with ways of modifying present home-canning methods either to improve the nutritive value or to facilitate procedures for the housewife. In this investigation, the effect of two methods of home canning on the ascorbic acid and thiamine contents of peas, snap beans, Lima beans, and soybeans was determined. Direct comparisons were made on identical lots harvested at the same stage of maturity.

The peas and snap beans were grown at the Pullman, Washington, station, handled by recommended home procedures, and processed within 3 hr. after harvesting. The Lima beans and soybeans were grown at the Prosser station, harvested with commercial equipment, transported to Pullman under ice, and stored over night at 32° F.

The Hundredfold variety of peas, the Stringless Black Valentine, Tendergreen, and Landreth Stringless Green Pod varieties of snap beans, the Fordhook variety of Lima beans, and the Bansei variety of soybeans were used.

EXPERIMENTAL PROCEDURE

In the first method of canning, the vegetables were blanched for 5 min. in boiling water and packed hot in self-sealing pint jars. The peas, snap beans, and Lima beans were covered with the boiling blanch-water, the soybeans, with fresh boiling water. Recommended times of processing were used (1). The weight of vegetable was determined before and after blanching, and equal amounts of blanched vegetable were placed in each jar with the proportionate amount of blanching liquor.

In the second procedure, the vegetables were packed unblanched in self-sealing pint jars, covered with boiling water, exhausted for 10 min. in the pressure cooker, and processed. The same weight of unblanched vegetables was put in each jar and covered with equal volumes of boiling water.

All canned samples were stored in the dark at a temperature of 60° to 65° F.

Ascorbic acid was determined by the method of Loeffler and Ponting (2). Thiamine was extracted as described by Moyer and Tressler (3) and determined as outlined by Conner and Straub (4). The vitamin values are expressed in terms of the fresh weight of the original raw samples (5).

The canned samples were prepared for analyses by determining the vacuum of the jar, the drained weight of the vegetable, and the amount of liquor. The vegetables were drained for 2 min. on an 8-in., ⅛-in. mesh screen. Analyses were run on the drained vegetable and liquor separately as well as on the drained vegetable plus the drained liquor associated with it. No significant differences were found between the two methods (6). The results reported here are the values for the canned vegetable and liquor. The data were analysed by the analysis of variance.

RESULTS AND DISCUSSION

Ascorbic Acid

Peas. Two years' study on peas showed that the unblanched-canned lots retained 20 per cent more reduced ascorbic acid than the blanched-canned lots, both 24 hr. after canning and after five and six months' storage (Table 1). The retention of ascorbic acid in the canned peas was similar to that reported by Olliver (7) and by Richardson and Mayfield (8), but was at variance with Fellers (9). In neither method was there loss during storage. In this respect, the results reported do not agree with those reported by Olliver (7) and by Mahoney *et al.* (10).

Snap Beans. The data on the three varieties of

[1] Published as Scientific Paper No. 730, College of Agriculture and Agricultural Experiment Stations, State College of Washington, Pullman. Received for publication August 9, 1947.

[2] The authors wish to express their appreciation to Drs. C. L. Vincent and W. J. Clore, who provided the vegetables for this study.

TABLE 1

Ascorbic acid and thiamine content of canned and stored Hundredfold peas

TREATMENT	REDUCED ASCORBIC ACID				THIAMINE			
	First year*	Retention	Second year*	Retention	First year*	Retention	Second year*	Retention
	mg./100 gm.	%	*mg./100 gm.*	%	*mg./100 gm.*	%	*mg./100 gm.*	%
Fresh	25.7		25.2		.312		.377	
Blanched-canned, after 24 hr.	15.6	61	17.7	70	.102	33	.151	40
Stored 5 months	17.0	66	18.8	75	.111	36		
Unblanched-canned, after 24 hr.	20.9	81	23.0	91	.119	38	.167	44
Stored 5 months	21.5	84	24.4	97	.145	47		
Difference necessary for significance at 5% level	1.0		0.5		.004		.004	
Difference necessary for significance at 1% level	1.4		0.6		.005		.006	

* Raw weight basis.

TABLE 2

Ascorbic acid and thiamine content of canned and stored snap beans

TREATMENT	STRINGLESS BLACK VALENTINE VARIETY				TENDERGREEN VARIETY				LANDRETH STRINGLESS GREEN POD VARIETY			
	Reduced ascorbic acid*	Retention	Thiamine*	Retention	Reduced ascorbic acid*	Retention	Thiamine*	Retention	Reduced ascorbic acid*	Retention	Thiamine*	Retention
	mg./100 gm.	%	*mg./100 gm.*	%	*mg./100 gm.*	%	*mg./100 gm.*	%	*mg./100 gm.*	%	*mg./100 gm.*	%
Fresh	31.7		.093		29.7		.108		32.9		.123	
Blanched-canned, after 24 hr.	19.3	61	.059	63	17.4	59	.071	66	18.3	56	.074	60
Stored 5 months	18.7	59	.048	50	17.5	59	.062	57				
Stored 6 months									14.7	45		
Unblanched-canned, after 24 hr.	23.5	74	.065	68	22.6	76	.076	70	22.9	70	.083	67
Stored 5 months	21.0	66	.062	67	22.6	76	.060	56				
Stored 6 months									19.6	60		
Difference needed for significance at 5% level	1.1		.009		0.8		.007		0.6		.005	
Difference needed for significance at 1% level	1.5		.013		1.1		.010		0.7		.007	

*Raw weight basis.

snap beans show results similar to those obtained with peas (Table 2). The unblanched-canned snap beans retained an average of 15 per cent more reduced ascorbic acid than the blanched-canned snap beans. The retention in blanched-canned snap beans 24 hr. after canning averaged 59 per cent. These results differ from those given by Farrell and Fellers (11) and Mayfield and Richardson (12) who found the retention to be 15 to 26 per cent. The Landreth Stringless Green Pod was the only variety to show a significant loss during storage, averaging 10 per cent. No explanation can be given for this loss, since the bean varieties were canned under the same conditions and the vacuum of the jars was similar for all.

Lima Beans. The Lima beans showed greater loss in the unblanched lots 24 hr. after canning, but there was no significant difference between the two methods after storage (Table 3). A significant increase in the reduced ascorbic acid content during storage was observed in both methods. It is doubtful that this can be attributed to the production of reductones as other studies (6) showed no formation of reductones in Lima beans.

Soybeans. The reduced ascorbic acid retention in unblanched-canned soybeans was 30 per cent more than in the blanched-canned soybeans (Table 3). Since the blanch-water was discarded, it would be expected that the ascorbic acid losses would be larger in the latter method. There was no loss during the three months' storage. These results are significantly higher than the 2.2 to 3.2 mg. per 100 gm. reported by Kramer *et al.* (13) for commercially canned Bansei soybeans.

Dehydroascorbic acid determinations, using the Bolin and Book (14) modification of the Roe and Oesterling method (15) were made on some of the canned lots of vegetables studied but results are not included in the tables. There was a small amount of dehydroascorbic acid (1.0 to 2.8 mg. per 100 gm.)

TABLE 3

Ascorbic acid and thiamine content of canned and stored Lima beans and soybeans

TREATMENT	REDUCED* ASCORBIC ACID	RETENTION	THIAMINE*	RETENTION
Fordhook Lima beans				
	mg./100 gm.	%	*mg./100 gm.*	%
Fresh	26.7	—	.267	—
Blanched-canned, after 24 hr.	17.8	67	.127	48
Stored 3 months	20.0	75	.123	46
Unblanched-canned, after 24 hr.	17.1	64	.139	52
Stored 3 months	19.8	74	.131	49
Difference necessary for significance at 5% level	0.3		.008	
Difference necessary for significance at 1% level	0.4		.010	
Bansei soybeans				
Fresh	15.0	—	.445	—
Blanched-canned, after 24 hr.	8.1	54	.089	20
Stored 3 months	9.4	63	.080	18
Unblanched-canned, after 24 hr.	12.8	85	.112	25
Stored 3 months	13.9	93	.095	21
Difference necessary for significance at 5% level	0.8		.006	
Difference necessary for significance at 1% level	1.0		.009	

* Raw weight basis.

24 hr. after canning. No increase occurred during storage. This was 30 to 40 per cent of that found in the fresh, unblanched samples.

Thiamine

Peas. The thiamine retention in peas was significantly greater in the unblanched-canned peas (38 and 44 per cent) than in the blanched-canned peas (33 and 40 per cent). However, the difference was not as great as found for ascorbic acid (Table 1). There was no loss during storage. Values for thiamine retention were somewhat lower than those previously reported (Fellers *et al.* [16], Lunde *et al.* [17], Harris *et al.* [18] and Mahoney *et al.* [10]).

Snap Beans. Table 2 shows the thiamine content of the snap bean varieties in the fresh and canned states. Although there was some variation between the varieties, it appeared that the retention of thiamine was only slightly affected by the blanching process. In both methods, the average retention was 66 per cent. After storage, the average retention was 58 per cent. These results are in agreement with Mayfield and Richardson (12) and Clifcorn and Heberlein (5) who reported a retention of 67 and 61 to 76 per cent, respectively, but disagree with Harris *et al.* (18) and Farrell and Fellers (11) who found 83 to 90 per cent retention.

TABLE 4

Ascorbic acid and thiamine content in canned vegetables and liquor

VEGETABLE	ASCORBIC ACID			THIAMINE		
	In solid portion	In liquor		In solid portion	In liquor	
	mg./jar	*mg./jar*	%	*mg./jar*	*mg./jar*	%
Peas	28.8	18.3	39.0	0.368	0.194	35.0
Snap beans	23.3	18.5	44.0	0.132	0.075	36.0
Lima beans	38.4	12.7	25.0	0.288	0.091	24.0
Soybeans	22.4	7.8	26.0	0.202	0.057	22.0

Lima Beans. The thiamine retention in Lima beans was significantly greater in the unblanched-canned lots than in the blanched-canned samples (Table 3) 24 hr. after canning and after three months' storage. This relationship held even though the unblanched-canned samples showed a significant loss during storage. The average retention was 49 per cent which agrees with the values of canned Lima beans given by Fellers *et al.* (16), Harris *et al.* (18), and Clifcorn and Heberlein (5).

Soybeans. The canning of soybeans caused a much greater loss of thiamine (15 to 40 per cent more) than was found with peas, snap beans, or Lima beans. This may be explained, in part, by the longer processing time required for soybeans. The retention of thiamine in canned-blanched soybeans ranged from 0.08 to 0.095 mg. per 100 gm. (Table 3). Kramer *et al.* (13) have reported 0.03 to 0.093 mg. per 100 gm. in commercially canned Bansei soybeans.

The unblanched-canned lots retained significantly more thiamine than did the blanched-canned soybeans, with both methods showing a significant loss of thiamine after three months' storage.

It would be expected that the blanched lots of soybeans would retain less thiamine than the unblanched lots since the blanching water was discarded. However, the difference between the thiamine retention in the blanched and unblanched lots was no greater than was observed with the other vegetables where the blanching water was used. This indicated that thiamine is not readily leached from soybeans. In freezing studies, it has been observed that smaller leaching losses occurred with soybeans than with other vegetables (6).

Ascorbic Acid and Thiamine in Solids and Liquors of Canned Vegetables

The analyses made separately of the drained vegetables and liquors are summarized in Table 4. These results represent averages for twelve to twenty jars of each vegetable. Similar values have been reported by Farrel and Fellers (11), Clifcorn and Heberlein (5) and Brush *et al.* (20). These data emphasize the importance of utilizing the liquid portion of the canned product.

Effect of Vacuum on Ascorbic Acid and Thiamine

The necessity of a good vacuum for the retention of ascorbic acid during storage was clearly emphasized in all vegetables studied. Jars with low-vacuum (2 to 5 in.), analyzed after storage, retained 4 to 32 per cent of the reduced ascorbic acid while jars with a good vacuum (12 or more in.) retained 50 per cent or more (as given in the tables).

The thiamine retention in the low-vacuum jars was similar to that in the jars with a good vacuum.

Palatability and Color

No differences were found in the palatability and color of the vegetables canned by the two procedures.

From these observations on quality and the analytical data on ascorbic acid and thiamine, it can be seen that blanching is not necessary for satisfactory home-canning of peas, snap beans, Lima beans, and soybeans. Cold-packing vegetables would eliminate the possibility of large losses of ascorbic acid and thiamine, especially when excessive amounts of blanching water are used. However, before this method can be recommended, it will be necessary to establish safe processing times.

SUMMARY

Comparable lots of peas, snap beans, Lima beans, and soybeans were canned with and without blanching. Ascorbic acid and thiamine were determined on the canned products before and after storage.

Except for Lima beans, the ascorbic acid retention was significantly greater in the unblanched-canned products than in the blanched-canned products. The reduced ascorbic acid retention in the unblanched-canned vegetables after storage averaged 90 per cent for peas, 67 per cent for snap beans, 74 per cent for Lima beans, and 93 per cent for soybeans. In peas, snap beans, and soybeans these average retentions were 20, 15, and 30 per cent, respectively, more than in the blanched-canned products. The canned vegetables contained small amounts of dehydroascorbic acid which did not increase during storage.

Thiamine retention was significantly higher in the unblanched-canned peas, Lima beans, and soybeans. The results with snap beans were variable. The average retention of thiamine was 40 per cent for peas, 63 per cent for snap beans, 49 per cent for Lima beans, and 21 per cent for Soybeans.

A good vacuum is required for the retention of ascorbic acid during storage. Low-vacuum jars retained from 4 to 32 per cent while jars with a good vacuum averaged more than 50 per cent. Thiamine retention was not affected by a low vacuum.

The drained liquors from the canned vegetables contained from 25 to 44 per cent of the total reduced ascorbic acid and 22 to 36 per cent of the thiamine.

The palatability and color of the unblanched-canned vegetables was equal to that of the blanched.

REFERENCES

(1) Wartime canning of fruits, vegetables. USDA Publication AWI-41, June, 1943.

(2) Loeffler, H. J., and Ponting, J. D.: Ascorbic acid. Rapid determination in fresh, frozen, or dehydrated fruits and vegetables. Indust. & Engin. Chem. Anal. Ed. 14: 846, 1942.

(3) Moyer, J. C., and Tressler, D. K.: Determination of thiamine in vegetables. Indust. & Engin. Chem. Anal. Ed. 14: 788, 1942.

(4) Conner, R. T., and Straub, G. J.: Determination of thiamine by the thiochrome reaction. Indust. & Engin. Chem. Anal. Ed. 13: 380, 1941.

(5) Clifcorn, L. E., and Heberlein, D. G.: Thiamine content of vegetables. Effect of commercial canning. Indust. & Engin. Chem. 36: 168, 1944.

(6) Bedford, C. L., and McGregor, M. A.: Unpublished data.

(7) Olliver, M.: The ascorbic acid content of fruit and vegetables with special reference to the effect of cooking and canning. Soc. Chem. Indust. J., Trans. Commun. 55: 153T, 1936.

(8) Richardson, J. E., and Mayfield, H. L.: The quality and vitamin content of green peas when cooked or home canned. Montana Agric. Exper. Sta. Bull. No. 381, 1940.

(9) Fellers, C. R.: Vitamin content of important foods in the child's diet. Am. J. Pub. Health 25: 1340, 1935.

(10) Mahoney, C. H., Walls, E. P., Hunter, H. A., and Scott, L. E.: Vitamin content of peas. Effect of freezing, canning and dehydration. Indust. & Engin. Chem. 38: 654, 1946.

(11) Farrell, K. T., and Fellers, C. R.: Vitamin content of green snap beans. Influence of freezing, canning and dehydration on the content of thiamin, riboflavin, and ascorbic acid. Food Research 7: 171, 1942.

(12) Mayfield, H. L., and Richardson, J. E.: The vitamin content of green string beans when cooked or canned and stored. Montana Agric. Exper. Sta. Bull. No. 373, 1939.

(13) Kramer, A., Mahoney, C. H., Stephenson, E. E., and Marks, A. L.: Canned vegetable soybeans. Food Packer 27: 47, 1946.

(14) Bolin, D. W., and Book, L.: Oxidation of ascorbic acid to dehydroascorbic acid. Science 106: 451, 1947.

(15) Roe, J. H., and Oesterling, M. J.: The determination of dehydroascorbic acid and ascorbic acid in plant tissues by the 2,4-dinitrophenylhydrazine method. J. Biol. Chem. 152: 511, 1944.

(16) Fellers, C. R., Esselen, W. B., and Fitzgerald, G. A.: Vitamin B_1 and vitamin G content of vegetables as influenced by quick freezing and canning. Food Research 5: 495, 1940.

(17) Lunde, G., Kringstad, H., and Olsen, A.: Effect of cooking and preserving on the vitamin B_1 content of vegetables. Angew. Chem. 53: 123, 1940.

(18) Harris, R. S., Proctor, B. E., Goldblith, S., and Brady, J.: Effect of processing on the vitamin B_1 content of foods. Proc. Inst. Food Technology 1940, p. 109.

(19) Harris, L. J., Mapson, L. W., and Wang, Y. L.: Vitamin methods. 4. A simple potentiometric method for determining ascorbic acid suitable for use with colored extracts. Biochem. J. 36: 183, 1942.

(20) Brush, M. K., Hinman, W. F., and Halliday, E. G.: The nutritive value of canned foods. 5. Distribution of water soluble vitamins between solid and liquid portions of canned vegetables and fruits. J. Nutrition 28: 131, 1944.

Editorial

AN EXPLANATION

The notice of the Annual Meeting of the members and enclosures which reached you soon after the appeal to "Look for the Big Things" in the September JOURNAL must have been somewhat of a surprise. The Committee would like to explain what happened.

At the Committee meeting in July there was considerable discussion about postponing the action on the new Constitution until after the Boston meeting. All members agreed that this would be most desirable, but all realized the need for action on certain matters before October, 1949. As Edward Morse, the attorney who has guided the Association for twenty-four years, was away on vacation, his office was consulted to determine whether or not a vote taken by mail after the Boston meeting would be constitutional.

We were informed that the Association's Constitution did not provide for such a vote. The Committee then decided to try to work out a Constitution that would be acceptable for the most part and to iron out any flaws in it at Boston. The recommendations from the meeting at which it would be discussed were to be turned over to a Constitution Committee for study. Eventually the revisions suggested for the new Constitution would have been prepared for the meeting in 1950.

In this way the Committee believed the Association would profit by getting into operation necessary changes and catch up with any mistakes. Thus the Committee went to work with a vengeance to meet the legal deadline for sending the proposed Constitution to the membership.

The more the Committee worked, the more it felt the need for membership discussion. It was the concensus of the group that some of the changes that have been made could be improved. Therefore, on August 13 when Mr. Morse returned to his office, he was consulted to see if there was any way that the present Constitution could be amended to provide for voting by mail after the Boston meeting.

After checking upon the Illinois state law he worked out the amendments that have been presented to you for your vote. The Committee felt a great sense of relief from the responsibility of making decisions and was confident the members would welcome the new plan which provides an opportunity for discussion before a proposed constitution is put to vote.

Two major changes not discussed in the two previous issues of the JOURNAL and announced for this issue concern life membership and the election of officers.

The Association is losing so much money on each life member that some change seemed imperative. Two ways of improving the life membership plans and at the same time helping the finances of the Association are possible: (a) to offer future life memberships at the cost of an annuity which will bring an annual income to the Association of about five-sixths of the current dues at the time that the life membership is taken out. This is not as expensive as one would think and will be presented in detail in the report at Boston; (b) to purchase annuities with the present life membership fund. As it looks, this would about double the income from this fund and over a period of years would prove very profitable to the Association. These annuities could be purchased out of the present life membership fund only with the consent of the individual life member, and the amount used for her annuity would be that which she had paid into the fund. The return to the Association would depend upon the age of the member at the time of purchasing the annuity. The plan has much merit but more work on details is needed before the Association binds itself to the plan.

As each of the present life members is a great financial burden to the Association, it seemed wise not to admit additional members until the new program is developed. The Constitution committee has presented an amendment to repeal life memberships. This is not meant to do away with these memberships, but merely to suspend them until the new and better plan can be completed.

The problem of elections is still under discussion by the Committee, but it is not far enough along to be presented here. The plan finally decided upon will be laid before you in Boston. If you have ideas, bring them along. They will help the Committee to select the procedure that will best serve the Association.

We hope that you approve of our decision to postpone action upon the proposed Constitution.—*Anna Boller Beach, Chairman, Constitution Committee.*

LAURA COMSTOCK

On August 7, 1948, Laura Comstock passed away, but in the hearts and thoughts of those who knew her she can never die. They only remember the aliveness, the animation, the friendliness, and the thoughtfulness which, coupled with her lovely appearance, made her a person who must forever stand apart. She was one of the rare individuals who combine those qualities which make their lives an inspiration and comfort to their host of friends. Such a person cannot die—in memory she lives on.

Laura Comstock was born seventy-three years ago in Cambria. She was graduated from Buffalo Normal School and taught successively in Luite Falls, New York; East Orange, New Jersey; and Geneseo (New York) Normal School. She studied home economics at Pratt Institute in Brooklyn and taught the subject at the University of Maine and at Massachusetts State College. She began her nutrition studies at Teachers College, Columbia University, in 1920 and went from there to Eastman Kodak Company, Rochester, New York, in 1922, where she remained until her retirement in 1940.

Her position—that of nutritionist in a large industrial concern—was the first of its kind in this country. Her work was outstanding, and she was able to demonstrate so clearly the value of such service that it has been both continued and expanded. To the end, she kept her keen interest in the activities at "Kodak."

Her committee work in Rochester was widespread and varied. She was always the first choice when a member trained in nutrition was needed. And her career in the American Dietetic Association needs little mention. To the Association which she served as president in 1934–35, she gave her heartiest and unfailing support. In fact, she had expressed the desire and hope of attending the Boston meeting this month.

Laura Comstock had the uncommon ability of weighing the merits of a problem, seeing all sides of a disagreement with an unbiased mind, and then arriving at a conclusion which usually was the final one. Rarer still was the fact that the opposing groups were reconciled. She truly poured oil on many a troubled water—in a friendly, gracious, and sincere manner. I wonder how many go through active public life without incurring criticism and envy. In my long association and friendship with her, I never heard a derogatory remark applied to her, perhaps partly because she was so generous in her dealings with others. Race, creed, color, and social standing had no influence on her actions.

Since her retirement in 1940, her health had slowly failed, although no one but her closest friends would have guessed it. Her appearance and her spirit remained unchanged. She was forced more and more to curtail, to rest, and to live quietly with her niece, Margaret Taylor, at their apartment in Rochester.

She had been to Maine on vacation in July and while there suffered several new heart attacks. She returned to Rochester for a stay of several days en route to Charlevoix, Michigan, to visit another niece. She arrived there after a trip that proved tiring—too tiring, for within several days another heart attack proved fatal. She slipped away suddenly, quietly, and happily, having had at least part of the vacation on which she had embarked in such high spirits.

Truly, with the passing of Laura Comstock, the American Dietetic Association has suffered a great loss.—*Estelle E. Hawley, Strong Memorial Hospital, Rochester, New York.*

ADMINISTRATIVE ADVISER RESIGNS

The Association regrets to announce that Bertha Biltz has resigned as Administrative Adviser, effective on October 1. During the course of her work on the staff of the Association she has made numerous contacts with hospitals, both by personal visits and by correspondence, and has helped with the reorganization of a number of dietary departments. In her advisory capacity, she has aided many of the members of the Association in solving the trying administrative problems presented today. She has also worked with allied professional organizations and equipment manufacturers in an effort to provide liaison between these groups and dietitians. In addition, she has taken care of the work of the A.D.A. Loan Library.

Miss Biltz came to the Association two years ago after reorganizing the Dietary Department of St. Luke's Hospital, Cleveland, and establishing the approved dietetic internship there. She has also been on the staff at Presbyterian Hospital, Columbia Medical Center, New York City, where she was Teaching Dietitian, and at Saint Marys Hospital, Rochester, Minnesota. Miss Biltz is a graduate of Kansas State College and holds a degree of Master of Science from the University of Chicago.

She is well known in the profession, both because of her wide contacts as Administrative Adviser and because of her active professional work. She served on the A.D.A. Hospital Approval Committee for four years, previous to her staff appointment, and has held the offices of President of the Ohio Dietetic Association and Vice-President of the Cleveland Dietetic Association. More recently, for the last two years she has been a member of the Dietetic Advisory Council of the Hospital Division of the U. S. Public Health Service.

Current Comment

SCHOOL LUNCHES IN PALESTINE

FRANCES BERKELEY FLOORE

Nutritionist, American Red Cross, Washington, D.C.

Unique among school lunch programs is that conducted at the Hadassah school system in Palestine where the children themselves prepare the food. In this manner they learn the fundamentals of cooking and nutrition along with their ABC's.

Starting in the sixth grade and continuing through the eighth grade, the girls and boys—in white caps and aprons—plan, cook, and serve the school meals. The various grades take turns in the kitchen, and one day in every three weeks is spent preparing the school meal. It is a day they all look forward to, for the children seem to prefer the cooking classes to the more formal lessons in reading, writing, and arithmetic. They work in pairs, each pair preparing for sixty students a complete meal consisting of three dishes. The menu includes a main dish, a vegetable or salad, and a dessert. Brown bread and milk complete the meal.

All food is prepared in kitchens which have miniature work tables and sinks. Most of the work is done sitting down, without seeming haste or confusion. Each child keeps a notebook with recipes, menus, and a record of the daily food costs. The latter teaches the students accounting as well as an appreciation of the cost of food.

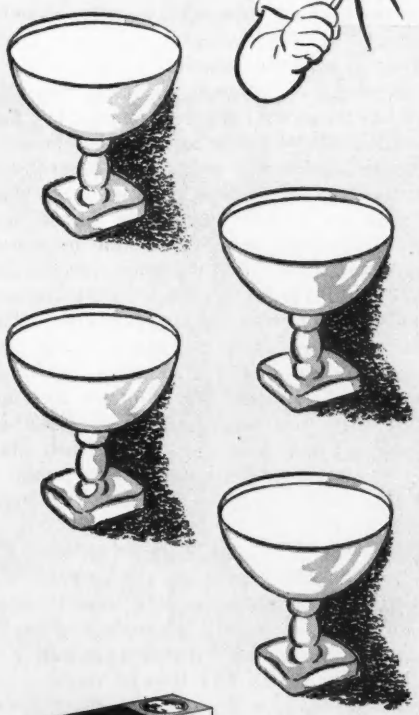
The cooking classes are responsible for maintaining order in the dining room and for washing dishes and cleaning the kitchen. All heavy lifting is done by a paid worker, who also washes the large pots and pans.

When the food is ready to be served, a bell is rung, and all the children wash their hands, which are then inspected by a "child supervisor" who is appointed from the group in charge of the feeding for that day. Each table in the dining room also has a "child mother" who sits at the head of the table and asks the blessing while the others sit with bowed heads and folded hands. The "little mother" then serves the food, and children wait until every one at their table has been served before they start to eat. She also is responsible for seeing that the children eat all the food on their plates, and no child gets a second

Pupils, under the guidance of the cookery teacher, preparing luncheon. Each pair of cooks prepares for 60 pupils a complete meal consisting of three dishes.

Inspection of hands before entering the dining room.

TURN Jeers TO CHEERS!



FOR MILK!

The extraordinary nutritional importance of milk in the dietary during infancy, childhood, pregnancy and old age — and for many gastro-intestinal and pre- and postoperative conditions — need not be lost to patients who are unable (because of personal dislike) to ingest it. Jeers for milk may be turned into cheers through the simple admixture of "Junket" Rennet Powder or Tablets. They transform milk into highly acceptable, deliciously flavored rennet desserts, which are eye-appealing and taste-tempting to young and old alike. These *uncooked*, custard-smooth rennet desserts in no way change the nutritional factors of milk, but they do facilitate easier, more rapid digestion because of the softer, finer, more flocculent curds produced in the stomach by the enzymic action of rennin.

Send for Authoritative Personalized Children's Diet Lists

Your name, address and telephone number imprinted on authoritative comprehensive diet lists for "Younger Infant," "Older Infant" and "Toddlers," are offered as a complimentary service by "Junket" Brand Foods. Fill out and mail coupon below for sample lists.

Make Rennet-Desserts with either:

"JUNKET" BRAND RENNET POWDER
—already sweetened; six popular flavors.

"JUNKET" BRAND RENNET TABLETS
—unsweetened, unflavored (particularly for diabetics).

"JUNKET" is the trade-mark of Chr. Hansen's Laboratory, Inc. for its rennet and other food products, and is registered in the United States and Canada.

"JUNKET" BRAND FOODS

"JUNKET" BRAND FOODS J-108
Division of Chr. Hansen's Laboratory, Inc.
Little Falls, N. Y.

Please send samples of diet lists and trial packages of "Junket" Rennet Powder and Tablets.

Name_____
Please Print

Address_____

City_____ State_____

serving or a dessert until his plate is clean. This seemed to offer no problem, and appetites were good the day I visited the schools.

The school for boys was one of the most interesting I saw in Jerusalem. The sixth graders, looking for all the world like miniature chefs in their white caps and aprons, were so engrossed in their work they paid no attention to us. They were preparing macaroni and cheese, cole slaw, and a pudding and were very serious about their work. I was shown their notebooks with large quantity recipes and some of the menus they had planned.

There is great competition among all the schools, as a prize is given to the class that serves the best food. This prize is a framed certificate stating that such and such a class had the best cooks and served the most varied menus at the lowest cost.

In the seventh and eighth grades the children are taught nutrition along with the cooking classes, using a textbook written by Sarah Bavly, who directs the program and is responsible for the organization, development, and supervision of the Hadassah school lunch system. She is a graduate of Amsterdam University and obtained her master's degree from Columbia University.

Assisting Mrs. Bavly are eighty cooking teachers and many assistant teachers. School lunches are served in 21,000 schools, 6000 kindergartens, and 1300 nursery schools. Some of the schools are not large enough to afford a cooking teacher and get their food from a central kitchen; or, in small settlements, it is prepared at the school by a paid cook. If the size of the school warrants, a cooking teacher is employed.

The school lunch budget in Palestine is about £200,000 or $800,000. The proportion of expenditures has been broken down as follows: 73 per cent for food; 7 per cent for the cooking teachers' salaries; 12 per cent for salaries of assistants; and 8 per cent for supervision, inventories, and administrative costs.

Most of the children are very poor and pay only about 10 mills or 1 cent for their meal. The rest pay for the cost of the lunch, which is about 10 cents. In summer the neediest children are given a recreational program at the school and receive three meals a day.

The important and interesting aspect of this Hadassah school lunch program in Palestine is that it is in charge of the children themselves—and very young ones at that. At the formative age, they are learning how to plan low-cost menus, how to prepare simple foods (which they can cook at home), and they are cooking food they know will be eaten by the other children, so they want it to be good. In the United States we talk a lot about nutrition being the "fourth R," but Palestine is the only place of which I know where it has been given a practical application. The three years' experience that these children get in cooking and nutrition will serve them the rest of their lives and make them better and healthier citizens. It is a program that could well be adopted in this country.

NEUROPSYCHIATRIC FOOD SERVICE TODAY[1]

GERTRUDE E. MILLER

Instructor in Dietetics, Veterans Administration Center, Los Angeles

This paper is a report of an observation. It describes the work being done by the dietetic staff of our 2000-bed neuropsychiatric hospital at the Veterans Administration Center, Los Angeles. To understand the present concepts of treatment for the mentally ill, it seems essential to look at the past. Development in all phases of medicine and its allied branches has not proceeded equally; therefore, we still find all too prevalent the attitude "you can't do that in a mental hospital."

Treatment of the sufferer from mental disease reads like an account of the Inquisition. True, there were intervals when the medical leaders saw lucidly and ministered sanely—witness the first century A.D. But when the influence of these wise men was lost in the centuries and the concept of demon possession began to prevail, insanity became hopelessly submerged in theology. It was then that the physician was barred from any approach to this disease, as he was also barred from the autopsy table. There are black, unsavory pages in history at this point and for several hundred years. Occasionally a voice was raised to protest the inhuman treatment accorded these poor unfortunates—a Tuke, a Pinel, a Dorthea Lynde Dix, a Benjamin Rush, and in our own century, a Clifford Beers; but, public opinion and fear growing out of ignorance are not easily changed.

Thus we read that one of the attractions of London was a visit to Bedlam where the keepers "displayed patients like animals in a side show." Indeed, in our own land, we read in the records of the Pennsylvania Hospital for 1760 it was proposed "a suitable Pallisade Fence either of Iron or Wood. . . .shall be erected in Order to prevent the Disturbance which is given to the Lunatics confined in the cells by the great Number of People who frequently resort and converse with them." Later it was suggested "at least a Groat" be charged these persons for the privilege to see.

Mental patients were beaten, chained, spat upon, and subjected to every sort of indignity even up to a time which could be within the memory of many people now living. It was accepted medical opinion that the insane were insensitive to cold and, therefore,

[1] Presented at the 30th Annual Meeting of the American Dietetic Association in Philadelphia, on October 16, 1947.

serve better tasting food

...and more of it*

*MORE FLAVOR
LESS SHRINKAGE
WITH
THURMADUKE
S-E-L-E-C-T-I-V-E
HEAT CONTROL

PROTECTED BY U. S. and FOREIGN PATENTS

ELECTRIC

GAS

MANY SIZES AVAILABLE

It pays to investigate

THURMADUKE

before you buy any food warmer because THURMADUKE can do more than any other food warmer to solve your problem of serving more, better tasting food at *no extra cost*. Selective Heat Control in each compartment keeps each food at *exactly* the right temperature. This means better flavor and less shrinkage. 70% less fuel consumption is another important saving. Sturdy bodies and Monel Tops are beautifully designed and constructed for easy cleaning and long, trouble-free service.

See your Equipment Jobber, NOW— or write for Catalog No. X-469

DUKE MANUFACTURING CO. • ST. LOUIS 6, MO.

for purposes of economy, no provision was made to heat their wretched cells. Such collective ignorance seems incredible.

There is not space to discuss the reasons for the transformation of the custodial asylum to the mental hospital of our day. Although the picture is still patchy, suffice it to say, the treatment which is common sense today could only have been regarded as a violation of sanity fifty or even twenty-five years ago. Chains were cheaper and presumably more effective restraints to wild impulses than the pleasant, air-conditioned, fluorescent-lighted rooms we see today, which may also be decorated in a soothing green.

What of today? None of us is insensible to the trend, I'm sure. It is tremendously fashionable and expensive to be psychoanalyzed. Few of us can afford the luxury of setting our erring temperaments straight this way, but, as someone has pointed out, "Why worry? We have the movies; where else is it possible to be psychoanalyzed for 50 cents—before 5 o'clock?"

As we examine the literature of yesterday and today, there is little in it about food service. Yesterday's we can vividly imagine. Today there are, of course, references to the symbolism of food, to the psychosomatic diseases concerned with gastrointestinal pathology, to the use of carbohydrate in insulin shock therapy, and, most recently, to the use of glutamic acid for mentally retarded children. There does not seem to be much written about the therapeutics of good food service. Such exists, I know, but this important service doesn't seem to be given much publicity.

I do not know who pioneered the field, but the Veterans Administration is proud to be a part of the newer trend. Confronted at the onset of World War II with potentially a tremendous patient load and equipped with neuropsychiatric hospitals no better than the average standards of the day, the Department of Medicine and Surgery with the assistance of the Dietetic Division began a constructive program which was in accord with the major goal, that "the veteran should receive medical care second to none." The overall medical program was supported by an aroused public opinion and by funds which were adequate for carrying on in the best accepted modern methods. Here were some of the goals to be accomplished:

(a) The mental hospital was to be a hospital with all that the name implies—not a custodial asylum where curable patients lapsed into chronicity and eventually became permanent wards of the government.

(b) All food service should be under the supervision of trained dietitians.

(c) All persons, both personnel and patients, should receive the same carefully planned and fully adequate diet.

(d) All food must be attractively served and in attractive dining rooms.

(e) Cafeteria service was to be the rule, but where necessary, waiter service would be used.

(f) Every effort must be made to insure adequate nutrition for every neuropsychiatric patient. (Some refuse food.)

(g) Patient help should be carefully screened and used only for therapeutic treatment.

(h) In the centers training dietetic interns, there should be adequate instruction in this unit so that the intern might be fully prepared to function in any assignment for duty.

These were the standards set for each mental hospital. Space does not permit an all-inclusive discussion of every point, but the results are evident as one tours with the ward dietitians during a service period.

At the Neuropsychiatric Hospital of the Veterans Administration Center in Los Angeles, the dining rooms, of which there are fifteen, *are* attractive. They are light and pleasant. Windows are draped; on some of the walls are pictures; and there are vases with freshly cut flowers. One or two dining rooms have murals done by a patient. Tablecloths are used everywhere, and there are flowers at each meal as long as the immense gardens can supply them—which in California is almost the year round.

Cafeteria service is used everywhere except in a few dining rooms in which senile and severely handicapped patients are fed. For them, there is waiter service. Trays are sent to the locked wards and to bedridden patients. It is interesting to note that even catatonic patients with the assistance of attendants and nurses are sent through the cafeteria lines.

Chinaware is used in all dining rooms except in those serving the acute and more disturbed patients. At present they are served on plastic dishes which are being replaced, as supplies are available, with stain-resistant nylon in colors. Full silver is used in all of the dining rooms using china; otherwise a dessert-size spoon is permitted.

One notices that the tables are set with individual salads and desserts; paper or nylon glasses of milk; and salt and sugar shakers. In some shakers is a salt-and-pepper mixture. To this neat and attractive table the patient brings his tray, having received his wrapped silver (counted) and having been served his main dish and any side dishes necessitated by the menu. Coffee is served black after the patient is seated. He may add cream and sugar if he so desires.

A dietitian covering three dining rooms is on hand during the meal hours to see that service flows smoothly and that food is hot and is attractively dished.

This service is attractive by any standards, and it is observed that the patients are far neater at the

The Breakfast that starts the day right!

Golden-good NABISCO SHREDDED WHEAT on the patient's breakfast tray is his signal to "pep up" and take an interest! For here's a breakfast so fresh and wholesome—so full of the whole wheat's natural flavor and goodness—it pleases both sick and well. Served any of a dozen different ways—NABISCO SHREDDED WHEAT is the one cereal that's just as good hot or cold—just as nourishing as a cooked cereal and tastes twice as good! And best of all—it's so *easy* and *economical* for you to prepare—so sure-to-please the patient!

50 YEARS OF FINE BAKING
1898–1948
NATIONAL BISCUIT COMPANY

"Eat a better breakfast—eat a cereal."

Insist on **NABISCO** Shredded Wheat

table when the atmosphere of the dining room suggests that of home.

To these surroundings we have recently added a still more personal touch. One of the dietetic interns took over two units as a special project. For these (the Woman's Unit and the Tuberculosis Unit) she procured from the Red Cross and Occupational Therapy gay place mats. She prepared butter curls, special garnishes for the salads and main dish, and made attractively decorated desserts. When the tables are set for a meal in these dining rooms, which serve forty-five and twelve respectively, one has the impression of having stepped into a tea room.

The patients have been most appreciative. It is not uncommon for one or two to break away from the cafeteria line, go to the tables, and examine every detail carefully. All patients in these buildings do not have dining room privileges, of course, but those in the restricted area have heard of the lovely dining rooms and many request permission to eat there. This cannot always be granted, of course. Some of the following comments have been recorded:

"Gee, the tables look pretty."

"Are we going to get to keep the place mats?"

"My word, I think I'm at the Waldorf."

"My, what appearance can do to your appetite!"

"I think the place mats are quite an improvement and everyone likes to sit at a table with flowers."

One patient brought her family to see the dining room. Up to this time she had made no effort to express herself on the change in her surroundings. Still another said: "I am not much at making speeches, but I would like to tell you how much we girls appreciate all you have done for us—the place mats, the flowers, the nice salads. I haven't had anything this nice since I joined the Army and it was three years ago that I left home." We consider that eloquent testimony.

The trays sent to the restricted areas often have a flower on them. These the patients usually take and keep at their bedside. Sometimes a flower is eaten, but what of that? I have seen recipes for frosted carnations.

When the dietetic intern had to be withdrawn from these services, the patients were quite concerned and they missed her very much. We feel that something is missing, too, and we intend to see that every intern is given an opportunity to learn what tremendous dividends personal interest will pay and that a dietitian's first duty is always to serve good food attractively.

The observable results of the food services which I have described could be listed as follows:

(a) Good food attractively served is an inestimable therapeutic aid. It helps to raise the esthetic standard of the patient and to prevent the deep regression ever imminent for the mental patient.

(b) In reality, the greatest expenditure involved in this food service which has long been accepted for the general medical and surgical hospital is the thoughtful planning on the part of the dietitian. Any monetary expense is undoubtedly balanced in the long run by shorter hospitalization and prevention of some cases lapsing into a chronic state.

(c) It has a marked motivating effect on the attendants. They serve more carefully and seem to be generally "influenced" by the atmosphere. If it be true that fully half the institutional psychiatrist's time is devoted to repairing damage unwittingly done by attendants, this is important to note.

(d) The staff find their efforts rewarding and they, in turn, work more diligently.

(e) The intern is obviously benefited. Three of ours are so interested, they have requested assignment in a neuropsychiatric hospital.

(f) Last—but certainly not least—the patient, who needs so much the friendly touch wherever it can be given, responds. He seems to feel that this is personal. It is for him. Basically this is of the greatest importance. We must never lose sight of the fact that although the work of a dietitian has many facets, she is ever and always one of the therapeutic team.

What we are doing today seems so natural we wonder why it wasn't done yesterday. As for tomorrow, it is inevitable that as research continues in the field of neuropsychiatry, nutrition will receive a larger share of attention. Already there are evidences. But with tomorrow, we shall not yet be concerned for you and I have the problems of today.

DIETITIANS—COMMUNITY LEADERS FOR BETTER HEALTH[1]

HELEN STACEY

Assistant Director, Nutrition Unit, Children's Bureau, Social Security Administration, Federal Security Agency, Washington, D. C.

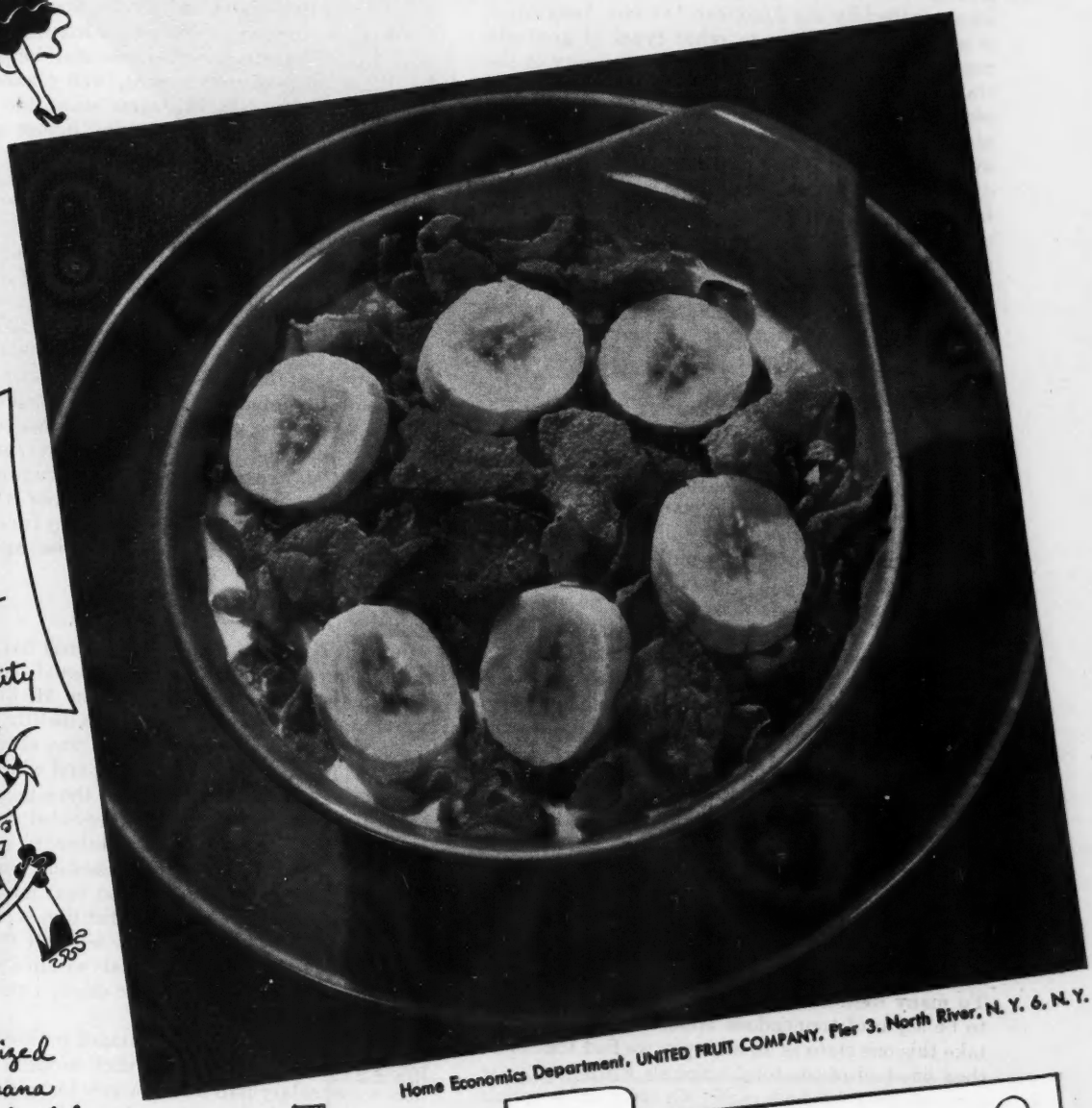
Recently the Nutrition Foundation gave the American Dietetic Association an award for outstanding accomplishments in nutrition, "In recognition of the leadership, inspiration, and diligence of its members in applying and in developing the science of nutrition in hospitals, government service, food clinics, public health agencies, school lunchrooms, colleges, universities, and industrial organizations, for the advancement of human health." In view of such a statement, a discussion of dietitians as community leaders for better health has special importance.

As most of you know, desirable qualifications for nutrition personnel in state health agencies have been

[1] Summary of a talk presented before the Tennessee Dietetic Association in Memphis, on March 6, 1948.

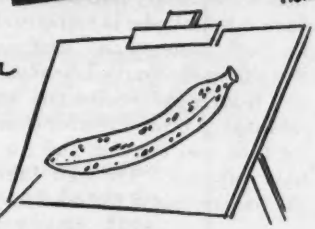
CHIQUITA BANANA SAYS:

A cheerful breakfast— CORN FLAKES and BANANAS



PLUS VALUES
Food Energy
+
Vitamins
+
Minerals
+
Easy
Digestibility

a medium-sized
fully ripe banana
contains approximately
two teaspoons of sugar

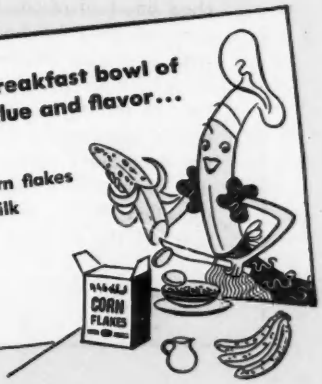


With ready-to-eat cereals
use fully ripe bananas....
yellow peel flecked with brown

Home Economics Department, UNITED FRUIT COMPANY, Pier 3, North River, N. Y. 6, N. Y.

Start the day with a breakfast bowl of extraordinary food value and flavor...

1 ounce (1 cup+) crispy corn flakes
4 ounces (½ cup) whole milk
1 teaspoon sugar
1 fully ripe banana
(an average serving)



set up by the professional groups most concerned with this field—the American Public Health Association, the American Home Economics Association, and the American Dietetic Association. The report, approved by the governing bodies of these three associations, states that "a course in hospital dietetics accredited by the American Dietetic Association is a desirable addition to other types of graduate preparation." Recently, I made a summary of the training and experience of nutrition personnel employed by state health agencies. Of the 128 nutritionists for whom detailed information was available, slightly over one-third had completed a dietetic internship. Some three years ago a similar tabulation showed that only about one-fifth of the group had completed an approved course. Apparently dietitians are entering this comparatively new field of public health nutrition in ever increasing numbers. I am speaking now of public health nutritionists as consultants in a generalized service, not as dietary consultants.

CONSULTATION SERVICE FOR SMALL HOSPITALS

Another opportunity in the field of public health for which dietitians are well qualified to become leaders has developed within the last five years. In fact, if I am not mistaken, the state of Tennessee was a pioneer in this field. In the fall of 1942, the state health agency appointed to its nutrition staff a young woman, a graduate of an approved course in dietetics, whose primary function was to serve in a consultant capacity to two tuberculosis hospitals as well as three detention homes, all operating under the direction of the state agency. Unfortunately for Tennessee, after only a few months of service, marriage claimed her, and then her successor. To date another worker has not been appointed.

Not until 1945 did another state health agency see the need for a worker with similar training. One of the midwestern states, Illinois, became so concerned with the quality of food service in those hospitals from which it was purchasing care for wives and infants of servicemen that it employed a well trained dietitian as a consultant. Her services were made available to the many hospitals in the state that did not have the services of a dietitian. To many dietitians, perhaps, this would not seem to be a job of tremendous importance. Yet, if we take this one state as an example, we find that more than one-half of the total hospitals within the state have less than 100 beds each. Of these 123 hospitals with less than 100 beds (42 with a capacity of less than 25 beds) employed no dietitian. Only 14 per cent of the 39 institutions with a 25- to 49-bed capacity employed a dietitian, and only 38 per cent of the remainder employed such a worker. It would not be feasible for all these institutions to employ a qualified dietitian on a full-time basis. Yet residents in the communities served by these small hospitals need, and should have, the same quality of service as the residents of large urban centers who seek service in hospitals fully staffed by qualified dietitians.

Even though all hospitals in this state were eligible for consultation service, priority was given to hospitals providing obstetrical service since the regulations of the Maternity Hospital Licensing Law required that "satisfactory facilities shall be provided for the serving of well cooked, well planned, and adequate meals." In this same state, the statute governing the licensure of nursing homes specified that the diet must be "related to the needs of each resident and based on good nutritional practice and on recommendations which may be made by the physician attending the resident." Such legal requirements carry tremendous weight with administrators to whom the dietary consultant makes recommendations. In describing this dietary consultation service, the Director of Maternal and Child Health has stated (1): "Its place in the total public health program is established and the possibilities for its expansion are unlimited. . . . Our hopes and expectations are that the problem of dietary assistance to hospitals will, like our public health nutrition programs of today, eventually become a responsibility of the local regions served. Such a goal is possible as a logical by-product of the long range program for construction and coordination of hospital and public health facilities."

SHARING A DIETITIAN

For the benefit of those who may not have seen a recent article in *Hospitals* (2), I should like to tell what one hospital administrator in Michigan did about improving food services in his institution.

During the war when personnel was short, when food was rationed and hard to get, and when professional workers were eager to help, the administrator of a small, twenty-bed hospital prevailed upon a retired dietitian, a busy wife and mother, to spend one day each week at his hospital assisting with menu planning and special diets. From that informal beginning grew a plan whereby a dietitian is employed as a full-time consultant to serve not only that institution but two additional hospitals within a radius of 35 mi., one a forty-five-bed, the other, a thirty-five-bed institution.

The dietitian's time is apportioned to the three hospitals on a weekly basis, and each hospital contributes to her salary plus an allowance for mileage. In each hospital, she is responsible for the general diet for both patients and staff as well as special diets. She has worked out efficient working schedules. She has rearranged equipment and supplies. She has established procedures for standardization of recipes, for food cost control, and for central purchasing of food supplies. Through time and motion studies she has increased the efficiency of operating depart-

GOOD EATING AT LESS COST!

Coast-to-coast research on comparative costs now available in booklet form

NEW BOOKLET PRESENTS RESULTS of 12-Month Research Project conducted by 19 leading American Universities on the **COMPARATIVE COST AND AVAILABILITY** of 12 of the most frequently consumed fruits and vegetables, **FRESH, FROZEN,** in **GLASS,** and in **CANS.**

PRACTICAL AS A CAN OPENER

New booklet, "Canned Foods in the Economic Spotlight," contains practical information. It is down-to-earth material which will enable you to show others how, in these days of high costs, it is possible to eat well the year round . . . yet spend less!

During the period from October, 1946, through September, 1947, 19 leading universities throughout the United States participated in a study of the cost and availability of 12 of the most frequently consumed fruits and vegetables in the four forms in which they are regularly marketed . . . fresh, frozen, in glass and in cans. The results of this comprehensive study boil down to this: *Penny for penny, canned foods in general give consumers more food for their money as well as more nutritional values.* Most foods in cans cost less than the same foods in other types of containers—less than fresh foods—and far less than frozen foods.

FREE!

New booklet entitled "Canned Foods in the Economic Spotlight"

Fill in coupon and address to: E
Can Manufacturers Institute, Inc.
60 East 42nd Street, New York 17, N. Y.

Please send me .... copies of your new booklet.

Name _____

Address _____

City _____ Zone State _____

ments. The educational aspects of her service are also stressed—the importance of teaching patients within the hospital as well as those served by the out-patient department. Two of these institutions maintain out-patient food clinics and the other offers her services on a private consultation basis. She also serves local physicians within the community who may refer patients to the hospital for this type of service.

It is doubtful if any one of these institutions would ever have been able to employ a full-time dietitian. Yet good patient care demands a well managed dietary department, good business management demands it, and good community planning demands it. These three small towns, none of them with a population over 10,000, have found a satisfactory solution to their problem. Certainly, that dietitian and her administrators are community leaders for better health.

All too frequently we fail to recognize that hospitals, as focal points in a community health program, have an important influence on public health education. If good dietary practices are carried on in the hospital and information concerning nutritional needs of patients is made available, both direct and indirect benefits will accrue to the community.

Good food service in every hospital is the responsibility of every dietitian. Good food service in every hospital to be constructed is even more our responsibility for we have an opportunity to do something about it at the planning stage if we act now. Certainly this is an opportunity for all of you to become community leaders for better health.

FEDERAL LEGISLATION CONCERNING HOSPITALS

Let us now consider what implications the legislation that has been enacted within the past two years has for dietitians. How may it affect the field of dietetics, not only as related to public health but to the entire profession?

Most dietitians are familiar with the Hospital Survey and Construction Act (Public Law 725) passed by the 79th Congress. Perhaps some of you know it as the Hill-Burton Bill. The purpose of the Act is to assist states in planning for and providing the hospital and public health facilities needed in order that all of the people in the community may be served. One of the requirements of the Act is that a state agency must be designated and authorized to carry out a preliminary survey or inventory of existing hospital and health facilities. It is hoped that, as a result of such surveys, federal funds will be authorized and appropriated as grants to states to assist in the construction of much needed hospitals and health centers. A certain proportion of funds must be contributed by the states.

The passage of this Act has stimulated interest not only among hospital groups but also among community leaders and organizations in the provision of adequate hospital facilities. These groups are joining forces in planning for their own communities. It would be desirable for dietitians to be represented on advisory committees and be available to consult with those individuals and groups responsible for carrying out plans to meet the provisions of this Act. Qualified dietitians could give many practical suggestions to architects "at the blueprint stage" in any hospital construction program. Also after the blueprints are stored away and the hospital becomes a reality, what of the food service department? Is it adapted to the needs of the group to be served? Is provision made in the budget for a full-time dietitian? For a part-time dietitian? For consultation service?

The size of these hospitals will vary considerably, but many, perhaps the majority of them, will be under 100 beds. Many will be unable to provide the services of a full-time dietitian even if such personnel were available.

Have you seen a report of the hospital survey in your state? If so, how many of the institutions list a full-time dietitian among professional personnel? How many are not of sufficient size to warrant employment of such a person, even if one could be found? In this latter group, what provision is made for an adequate dietary service? Has any plan been suggested to the group responsible for planning or improving facilities? Are any dietitians on state or local advisory committees? Many dietitians are members of state hospital associations. Do you attend their meetings? Do you invite them to meet with you? Perhaps you have joint meetings. I am confident that you have some plan for joint discussion of common problems.

TRENDS IN STATE LEGISLATION

Another trend in legislation apparent within the last few years has implications for our professional group. Many state legislatures are passing licensing laws and are placing responsibility for enforcement of such laws squarely upon the shoulders of the official state health agency. Such legislation carries with it responsibility for setting up standards for various types and sizes of institutions as well as rules and regulations for enforcement of such standards. Along with the legal responsibilities for enforcement of the law, most states are also aware of their responsibility for offering a service that is not just a checking service, but a consultation service to assist the institutions in establishing and maintaining the best possible standards for good patient care.

Frequently this responsibility rests with a special administrative unit of the state agency. Even though they may not have completed a dietetic internship, nutrition consultants serving an agency can give much help to such a unit. They, themselves realize their shortcomings, however, and have been active in persuading agency administrators that such specialized units should have the services of a well-

An excellent FIRST after surgery...

Applicable in every low-residue diet...

A bright spot in any breakfast...

Malt-o-Meal, an enriched farinaceous wheat cereal flavored with toasted malt, finds wide application whenever a bland, easily digested, cereal food is required. Virtually devoid of residue which might prove irritant, it may be employed in all types of bland diets. It is readily digested and imposes no added burden on the intestinal tract. The delicious flavor of Malt-o-Meal is enjoyed by all patients, assuring its acceptance by children, adults, and the aged. Malt-o-Meal provides in addition to the basic nutrients of wheat significant amounts of thiamine, riboflavin, niacin, and iron. It quickly cooks to creamy consistency, and is equally attractive whether served with milk or cream.

CAMPBELL CEREAL COMPANY, Minneapolis, Minn.

Malt-o-Meal

Malt-o-Meal, an enriched wheat cereal flavored with toasted malt, provides per ounce (dry weight), 0.29 mg. of thiamine, 0.13 mg. of riboflavin, 1.09 mg. of niacin, and 2.00 mg. of iron. Thus Malt-o-Meal provides appreciably more thiamine, riboflavin, and iron than does whole wheat, and 78% of the niacin content of whole wheat.

trained dietary consultant. The first states to appoint such workers, Tennessee and Illinois, have been mentioned above. Since these states first appointed dietary consultants, several additional states have realized the need for similarly trained personnel. Today there are nine state health agencies employing dietary consultants as staff members of the nutrition units. This is a relatively new field for dietitians, a field in which again they may become community leaders for better health.

Agencies and organizations throughout the states are looking to us for help in these situations. Are we ready to help? As many of you know, several state dietetic associations attempted to give consultation service on a volunteer basis during the war years. But this is not enough. Can we expect busy workers to carry on such services as volunteers in addition to a full-time job? Should it not be the responsibility of our professional group to point out, perhaps on a demonstration basis, the need for this type of service and assist in obtaining personnel?

Tangible evidence that there is a job to be done reaches my desk every day. Just last week came a report from a state saying that "the Division of Hospital Facilities has asked for assistance in preparing the standards for dietary departments for use in licensing hospitals. We discussed the advisability of asking the state dietetic association to appoint a committee to assist in meeting this request."

A report from another state received the following day stated: "A report of food service in state institutions made by the state nutrition committee is on file with the state health agency. The nutrition consultant is following up on this survey, and, by working closely with the state dietetic association, hopes to plan some continuous consultation service to selected institutions most in need of assistance."

Instances such as this might be multiplied many times over. Sufficient evidence is at hand that help is needed. What are your plans as a state association? If you have not been called upon for service, can you afford to wait? Soon the "blueprint stage" will have passed. It will be too late. The time to act is now. If we can participate at the planning stage, we can help to establish dietary departments, properly equipped and adequately staffed. Or, we can assist in pointing out the need for provision of regular consultation service from some state agency.

Community health demands high food standards whether people are in their own homes or in institutions. Our special job, or rather one of our special jobs as dietitians, is to be sure that people are well fed when they are in institutions. Dietitians can and should use their influence to see that good food service departments in all institutions within their state are established. Truly, then they will have become community leaders for better health.

REFERENCES

(1) HERBOLSHEIMER, H.: State consulting service to aid small hospitals with dietary problems. J. Am. Dietet. A. 23: 947, 1947.

(2) MARINE, J. W.: Three hospitals try experiment in sharing dietitian. Hospitals 22: 97 (January), 1948.

Use of Stainless Steel in Cooking

Stainless steel represents no fixed alloy composition and may represent 18 per cent chromium and 8 per cent nickel, the remainder being steel. However, there may be a minor constituency of silicon, columbium, manganese, and/or beryllium. In any event, these metals provide no exposure for the user. Food acids attack stainless steel little and mineral acid scarcely more. Phosphoric acid is more active in attacking such utensils. Stainless steel is more durable than aluminum, but, in truth, is not permanently stainless. Its bright surfaces reflect heat, which suggests that the bottom should be allowed to become blackened or should be deliberately blackened. Stainless steel is a poor conductor of heat, so that localized points of heat might interfere with cooking. To overcome this, some manufacturers introduce a second bottom of copper as a heat conductor, but obviously this adds to the cost. Cast iron utensils are more easily attacked by chemicals within foods and may provide enough dissolved metal to impart unwanted taste. Notwithstanding, many old-timers continually regard the passing of the cast iron cooking pot as a major gustatory defeat.

"Waterless" cooking is a catch phrase to emphasize "a little water." Some vegetables contain enough water to require none in addition; the majority require a fraction of an inch of water. Obviously, an egg boiled in a gallon of water requires more fuel than the same egg boiled in an ounce of water. Equally obvious, the loss of vitamins and minerals increased in copious quantities of cooking water. For example, cabbage cooked in much water retained 54 per cent of its ascorbic acid. The same cabbage cooked in a minimum of water retained 84 per cent of its ascorbic acid. However, for snap beans and potatoes no differences are measurable from the two methods of cooking. Ordinarily, cooks prefer little water in order to conserve the shape of certain vegetables, such as cauliflower. Further, it is obvious that more time in addition to more fuel is required to heat up a large amount of cooking water. All considered, the waterless cooking appears to have substantial merit as a vitamin-mineral saver, a fuel saver, a time saver, and an appearance saver.—*From Queries and Minor Notes, J.A.M.A. 137: 920 (July 3), 1948.*

For the DIETITIAN . . .

A MEAT SUPPLY SERVICE

that's DISTINCTLY different

Have you often wished you might specify precisely the kinds and cuts of meats you want . . . and have those specifications rigidly adhered to?

You CAN; and, as a consequence, achieve greater economies of time and work, lower food costs, and an even higher standard of food service.

Pfaelzer Brothers have pioneered to its present perfection a specialized, PERSONALIZED SERVICE that has proven to be *the* answer to today's meat-buying problems. This service is "tailored" to satisfy *specific* requirements.

Unlimited resources . . . thoroughly modern facilities . . . an experienced staff of highly-skilled technicians with an understanding of, and a sincere interest in the dietitian's problems . . . all these add up to a PERSONALIZED SERVICE whose popularity is demonstrated by its ever growing number of dietitian users.

Your patients, staff and employees will be delighted with the greater eating satisfaction our service affords. You will be impressed with the LOWER FOOD COSTS, our eight PLUS VALUES insure.

You specify. We comply. Give our PERSONALIZED SERVICE a trial. You'll find it's the *modern* way to buy . . . meats, poultry, and food specialties.

CHECK LIST OF PFAELZER'S EIGHT PLUS VALUES

- ✓ ***A COMPLETE LINE*** of "tailor-made" meats, poultry, food specialties.
- ✓ ***UNIFORM QUALITY and WEIGHT AVERAGES.*** You receive every time, only as much meat as you order and the quality and weight averages you specify.
- ✓ ***DRY AGING*** enhances flavor and tenderness, absorbs meat's excess moisture, minimizes cooking shrink.
- ✓ ***EXPERT CUTTING, ECONOMY TRIM,*** by meat cutting specialists, insure less suet, fat, and bone waste, maximum number of servings per cut, greater value per dollar spent.
- ✓ ***U. S. GOVERNMENT INSPECTION*** insures product wholesomeness.
- ✓ ***U. S. GOVERNMENT GRADING,*** a further assurance that you receive the exact quality you buy.
- ✓ ***THOROUGH PACKING and DRY-ICE*** refrigeration insure arrival in sanitary, fresh condition.
- ✓ ***FAST, ON-TIME, FREQUENT, PREPAID*** delivery to your door . . . a great ordering convenience.

Write for copy of our MEAT BUYER'S Guide and Price List; pamphlet "Your Hospital and Good Food." Tear off and mail the convenient coupon TODAY!

PFAELZER BROTHERS UNION STOCK YARDS CHICAGO 9, ILLINOIS
THE HOUSE OF PERSONALIZED SERVICE
America's Finest Meats and Poultry

PFAELZER BROTHERS,
Hospital Dept., Union Stock Yards, Chicago 9, Illinois.

Gentlemen: Without obligation, send me a copy of your: ☐ Buyer's Guide and Price List ☐ Pamphlet, "Your Hospital and Good Food." ☐ Have your representative in this area call.

Hospital Name.....

Dietitian's Name.....

City.....State.....

Visit our Booths 36 and 121
at the A.D.A. Convention, October 19 to 22.

Book Reviews

Modern Treatment of Peptic Ulcer. By Asher Winkelstein, M.D. New York: Oxford University Press, 1948. Cloth. Pp. 205. Price $4.

The author is Associate Physician for Gastro-Enterology and Physician in Charge of the Gastro-Intestinal Clinic, The Mount Sinai Hospital, New York City. He is also Assistant Professor of Clinical Medicine at Columbia University.

The purpose of the book is to present in detail the various problems associated with the nature and the treatment of peptic ulcer. The contents of the book deal largely with the intragastric drip therapy, which is the author's own contribution to ulcer therapy; vagotomy; the psychosomatic approach; the protein hyperalimentation therapy; and enterogastrone.

An addendum chapter includes drug prescriptions and two pages of diet lists. While numerous alternative forms of therapy are considered in other subject matter, this is not true in the presentation of the diet lists. Only the diet used at the Mount Sinai Hospital and the author's "liberal ulcer diet" are presented.

Although one of the principles of the diet is stated to be "vitamins and minerals in adequate dosage," no explanation is given regarding the "adequate dosage." In fact, in Diet List I, a question can well be raised regarding the adequacy of vitamins in the diet.

The author states, "The use of alkalies in the treatment of peptic ulcer is highly desirable." In this connection, no consideration is given to the question which has frequently been raised regarding the influence of alkalies in decreasing the amount of ascorbic acid and the B-complex in the diet.

While the dietitian will be interested in some of the newer forms of medical, surgical, and psychosomatic therapy, there will be little that is not familiar to her in the dietetic therapy given in this book.

Nutritional Disorders of the Nervous System. By John D. Spillane, B.Sc., M.D. (Wales), M.R.C.P. (London). Baltimore: Williams & Wilkins Company, 1947. Cloth. Pp. 280. Price $5.

The author is Assistant Physician and Neurologist, Cardiff Royal Infirmary. He was formerly Adviser in Neurology to the Middle East Forces, and this monograph was written as a result of his experiences during the war.

While serving in the British Army as Adviser in Neurology, he recognized and investigated among German and Italian prisoners of war and among Polish refugees a number of nutritional deficiency syndromes which later were found to have affected a considerable number of captives of various nationalities in Japanese prisons.

This is one of the first books to appear which attempts to deal systematically with nutritional disorders of the nervous system, which were relatively common, especially among prisoners in the Far East. In addition, the book includes not only these disorders but those resulting from deficiency of the B-complex, pellagra, beriberi, polyneuritis, Wernicke's encephalopathy, nicotinic acid deficiency encephalopathy and allied states, and subacute combined degeneration of the spinal cord.

Illustrations and case reports amplify the reports of clinical observations.

In conclusion, the author points out that the known facts do not lend support to the *simple* concept of deficiency diseases—with vitamins playing the role of catalysts and derived from exogenous sources—as propounded thirty years ago. Fallacies have arisen, as in any situation which entails the application of data to human beings.

In the main, the book is a record of clinical and experimental observations which may serve as a basis for extended study.

Some Pathologic Consequences of Protein and Amino Acid Deficiencies. By Paul R. Cannon, Ph.D., M.D. Springfield, Illinois: Charles C. Thomas, 1948. Pp. 49. Simulated leather. Price $1.50.

New concepts regarding the results of protein and amino acid deficiencies have been brought together in this recent monograph by Dr. Cannon, Professor of Pathology, University of Chicago. The importance of proteins is well pointed up both by a consideration of the consequences of *total* amino acid deficiency and the effects of a *specific* amino acid deficiency.

Deficiency diseases caused by an inadequate intake of minerals and vitamins have been studied sufficiently to describe particular lesions as specific. However, these deficiencies due to a lack of amino acids have not been so carefully identified. The author describes the results of a *total* amino acid deficiency, hypoproteinemia, intercurrent infections, and the relationship of protein reserves and acquired resistance to infection.

The problem of *specific* amino acid deficiencies has been approached from two viewpoints: first, what are the consequences of an absolute lack of a single indispensable amino acid in an otherwise adequate diet, and second, what are the effects under similar circumstances of an insufficiency rather than a complete lack of one indispensable acid?

These questions are discussed under the topics: "Amino Acid Deficiency and Appetite," "Relationships of Essential Amino Acids and Tissue Synthesis," and "The Necessity for Simultaneous Availability of Essential Amino Acids in Tissue Synthesis." Examples of specific deficiencies are described for tryptophan, lysine, methionine, and arginine.

The author concluded on the positive side that "much evidence has accumulated which helps to clarify understanding of the mechanisms of tissue synthesis. For example, the studies utilizing amino acid mixtures are indicating that the synthesizing mechanisms concerned with tissue fabrication are precise and apparently 'all or none' in character. In other words they operate effectively only when they have at their disposal all essential dietary constituents together with the energy supply essential for the task of synthesis. If one or more essential amino acids is absent, however, synthesis fails. It would seem, therefore, that once the process of synthesis has started, it goes to completion or not at all."

The dietitian and nutritionist will find this small monograph of real value in attempting to fit the needs for protein

News Bulletin

Gerber's Meats are ARMOUR Beef, Veal, Liver 4-ways good for special diet patients!

1. Outstanding for flavor, texture, color.
2. Low in fat, Gerber's Meats average 3.4%.
3. Extra convenient! No scraping, no cooking! Just heat and serve.
4. Economical! All lean meats with natural meat juices. No waste! Gerber's Strained and Junior Meats are one moderate price!

New sources for amino acids. Now you can increase the important protein-intake of your special diet patients with particularly palatable meats prepared from government-inspected cuts. Readily assimilated, Gerber's are strained *or* uniformly particulated.

Gerber's

FREMONT, MICH.—OAKLAND, CAL.

3 Cereals • 20 Strained Foods • 15 Junior Foods
3 Strained Meats • 3 Junior Meats

ACCEPTED COUNCIL ON FOODS AND NUTRITION AMERICAN MEDICAL ASSOCIATION

For complete analyses and additional information, write to Gerber's, Dept. 2310-8, Fremont, Mich.

into the world-wide problems of food shortage, hunger, undernutrition, and disease.

Motivation in Health Education. The 1947 Health Education Conference of the New York Academy of Medicine. New York: Columbia University Press, 1948. Cloth. Pp. 53. Price $1.

The four papers in this small book deal successively with the philosophic, the empirical, the psychological, and the anthropological approaches to the problems of motivation in health education.

Iago Galdston, M.D., Executive Secretary, Committee on Medical Information, New York Academy of Medicine, introduces the subject by giving the history of the idea of motivation and the various forms in which it has appeared in the development of philosophy and religion. His presentation is intended not only to set the stage, but more emphatically, to awaken the realization that health education is not a pursuit in "splendid isolation." Its tasks are *not merely to teach the facts* of the modern science of hygiene, *but ultimately to persuade men to apply these facts.* "For that end there is a need for an appreciation of man's psyche, of its components, their derivation, and their integrative function."

W. W. Bauer, M.D., Director, Bureau of Health Education, American Medical Association, considers "The Changing Patterns of Motivation." He describes some of the early crude attempts at health education which used such motives as fear and shame. Dr. Bauer paints a grim picture of a patient attempting to heed the warnings and threats he has reeeived from innumerable health educators. He points out that man is swayed by many worthy and unworthy motives—and in justice to the patient, he urges that the professional worker avoid overemphasis on those motives which may be inherently harmful, especially fear, hate, envy, malice, and other similar corrosive emotions.

Lawrence S. Kubie, M.D., Clinical Professor of Psychiatry and Mental Hygiene, Yale University School of Medicine, contributes "Myths and Resistances in Health Education." He undertakes to show the "universal origin in childhood of the psychological forces which distort our unconscious attitudes to sickness and to health, and how these buried residues of childhood experiences have been incorporated into the legends and myths which cluster around our ideas of hygiene."

He lists five obstacles to health education:

(a) Ambivalence about health and sickness. This can be on a conscious or nearly conscious level (where we speak of the secondary advantages of illness), or it can be on a much subtler subconscious level.

(b) The confusions and obstacles which arise from fantastic exaggerations of the magic which health and strength can achieve.

(c) The confusions caused by conflicts over psychosexual functions.

(d) The related confusions arising from the refusal to be reconciled even to the anatomical differences between the sexes.

(e) The confusions arising from the prevalent fantasy that the body is a kind of mobile dirt factory.

Dr. Kubie offers no solution to these obstacles, but concludes that "to develop techniques by which they can be overcome will require many years of thought and effort."

Margaret Mead, Ph.D., Associate Curator of Ethnology, Department of Anthropology, American Museum of Natural History, New York, discusses "Positive Motivations in Health Education." She points out that an understanding of the cultural pattern, the prevailing attitudes towards the body, toward reward and punishment, towards life and death, provide a framework within which it is possible to develop an educational program which has strong positive appeals." Most of her illustrations are taken from the field of nutrition.

As co-workers in the field of health education, the nutritionist and dietitian will find this small book full of stimulating ideas and rich background for some of their own problems in attempting to change food habits. They have learned already that it is not enough to teach the facts; they must also change behavior. And this calls for a new knowledge and appreciation of human behavior.

Calcium and Oxalic Acid in Arthritis

Because atrophy of epiphysial bone occurs often in rheumatoid arthritis and osteophytes (bony spurs) develop in osteoarthritis, physicians through the years have entertained the idea that some disturbance of calcium metabolism may be related to chronic arthritis. But no definite evidence of any such disturbance has ever been produced, and the concentrations of calcium in blood and urine of arthritic patients are generally normal. The bony spurs of osteoarthritis and the epiphysial atrophy of rheumatoid arthritis are believed to result from local, not general abnormalities.

The level of oxalic acid in the blood of patients with various rheumatic and arthritic complaints has apparently interested a few foreign physicians for many years. The literature on this subject has been summarized recently by Jozef Grott, F. Kowalski, and S. Windyga. These workers also reported their observations on the oxalemia of 402 patients. Included were seven patients with "polyarthritis deformans," but the oxalic acid level is stated specifically in only "three cases of severe polyarthritis deformans and one case of spondylarthritis deformans"; in all of these, a normal level of oxalic acid was found. In four of nine patients who had Heberden's nodes, the level of oxalic acid in the blood was increased.

From the evidence at hand there appears to be no rationale for the use of preparations of either calcium or oxalic acid in the treatment of any type of arthritis. No report on the use of oxalic acid in treatment of chronic arthritis has been noted. An account of the current conflicting views with regard to oxalic acid is contained in an editorial in THE JOURNAL [J.A.M.A.]. In general, "the biologic significance of oxalic acid requires more clearcut definition," but it may be pertinent to point out that the formation by oxalic acid of a highly insoluble precipitate with calcium (calcium oxalate) "is said to account for some 40 per cent of the cases of urolithiasis."—*From Queries and Minor Notes, J.A.M.A. 137: 1350 (August 7), 1948.*

The finest fruits of tree and vine
Are in that splendid MONARCH line.
The best of fruits, of juice, of spice,
Of corn, of beets, of peas, of rice,
Are packed and labeled MONARCH brand
(The quality is simply grand).
In fact, 500 foods and more,
With eye and taste appeal galore,
All bear that famous LION HEAD LABEL
And should be found on every table.
If you'll just try this grand old line
We're sure you'll buy it every time.

MONARCH

World's Largest Family of Nationally Distributed Finer Foods

REID MURDOCH, Division of Consolidated Grocers Corp., Chicago, Ill.

Current Literature

Contributed by Janette C. Carlsen and Ethel M. Miller, Dietary Department, The Johns Hopkins Hospital; and the Journal staff.

THE AMERICAN JOURNAL OF NURSING

Vol. 48, August, 1948

* The status of nutrition. H. D. Kruse.—p. 491.
* This pay cafeteria works.—p. 496.

Nutritional Deficiencies. Reviewed here is the broader concept of the characteristics of deficiency diseases. Although the traditional, severe, fully-developed syndromes of deficiency diseases are not common today, there is an appreciable proportion of malnourished persons in various regions of the U. S., as indicated by examinations revealing chronic deficiency states and by biomicroscopic examinations. Because chronic deficiencies so often go unrecognized, in spite of their large-scale prevalence, one wonders just how important they are. Examples are given which indicate that such deficiencies can be exceedingly troublesome and actually disabling. On the other hand, the author points out the advantages of good nutrition. He cites studies showing its effect on growth and strength, on mental faculties, on pregnancy, and on aging.

Pay Cafeteria. The pay cafeteria at Lenox Hill Hospital, New York City, is described. The advantages of the pay cafeteria are brought out, and the general attitude of the nurses toward the newer meal system is discussed. Under the direction of the head dietitian and her assistants, an efficient service has been developed. Typical menus for breakfast, dinner, and supper are included in the article, and the cafeteria service for student nurses, which is slightly different from that for graduate nurses, is described.

FOOD RESEARCH

Vol. 13, March–April, 1948

* Effect of variety and storage on ascorbic acid content of sweet potatoes. B. D. Ezell, M. S. Wilcox, and M. C. Hutchins.—p. 116.
* Variation in composition of winter squashes. A. D. Holmes, C.T. Smith, and W. H. Lachman.—p. 123.

Vitamin content of snap beans grown in South Carolina. F. R. Hayden, P. H. Heinze, and B. L. Wade.—p. 143.

Vol. 13, May–June, 1948

Flavor of meat. E. C. Crocker.—p. 179.

* Comparison of analyzed with calculated diets. V. Toscani.—p. 187.
* Effect of variety and storage on carotene and total carotenoid pigments in sweet potatoes. B. D. Ezell and M. S. Wilcox.—p. 203.

Survival of bacteria in a precooked fresh-frozen food. M. F. Gunderson and K. D. Rose.—p. 254.

Ascorbic Acid in Sweet Potatoes. Although sweet potatoes are generally considered as a source of carbohydrates, they are a valuable source of vitamins as well. Since the rate of many biochemical reactions approximately doubles for each 10°C. rise in temperature, and since sweet potatoes are held for "curing" at a temperature near 85°F. for several days following harvest and may be stored for several months at temperatures around 55° or 60°F., the question of what happens to the ascorbic acid under these conditions is of considerable importance. The ascorbic acid content of five varieties of sweet potatoes—Nancy Hall, Southern Queen, Triumph, Porto Rico, and Yellow Jersey—was determined at harvest, shortly after curing, and during the storage season. On a fresh-weight basis, the sweet potatoes contained about the same amount of ascorbic acid as tomatoes; the mean value was 25.5 mg. per 100 gm. of sweet potato. Of the five varieties used in this study, the Nancy Hall had the highest ascorbic acid content and averaged 43 per cent more that the Yellow Jersey, the lowest variety. Losses of the vitamin during the curing period averaged 22 per cent. Losses during curing and in storage averaged 33 per cent.

Nutritive Value of Squashes. Assays of the edible portion of five varieties of squashes commonly used in the Massachusetts area were made for water, protein, reducing sugars, carotene, reduced ascorbic acid, calcium, magnesium, phosphorus, and potassium. Results showed considerable variation in the composition of the different varieties of winter squashes and of the different squashes within the varieties even though all were grown under uniform soil, fertilizer, and climatic conditions. A table showing these variations is included. The varieties of squashes analyzed were: Blue Hubbard, Buttercup, Butternut, Des Moines, and Golden Cushaw.

Comparison of Analyzed with Calculated Diets. An investigation of the constancy of the constituents of a number of diets was determined during the course of a metabolic study of immobilization on four normal men. During a two-year period, twelve diets were analyzed for their nitrogen, calcium, phosphorus, sodium, and potassium content. Three of the diets contained 2500 calories, while nine had a value of 2800 calories. The experimental procedure is described, and a table giving the weights of the constituents of the diets is included. Tables are also listed which compare the calculated and analyzed figures of the constituents of the individual diets. There was considerable difference between the two sets of figures. However, the averages of the figures obtained by analysis showed good agreement with the published tables, with the exception of the potassium value. Due to the variations illustrated in this study, the authors stress the importance of knowing exactly the nature of a food product used. For example, foods rich in sodium, such as cheese and salted butter, should be examined carefully as to their type. Cheddar cheese has a sodium content of 540 mg. per 100 gm., whereas process cheese has a sodium value of 1500 mg. per 100 gm. Bacon is another foodstuff which influences the calculated sodium content greatly. Another appreciable error can be introduced if a beverage, such as coffee, which has no caloric value, is omitted from the calculated figures. In this case the potassium content of the coffee would be omitted from the calculated diet.

Carotene in Sweet Potatoes. A study was made to determine whether there is an increase in provitamin A content of sweet potatoes during storage. In all varieties studied

THIS Gelatine is All Body-Building Protein

Recommend Knox all protein gelatine as a dietary supplement

Knox Gelatine is a wholesome, palatable food protein with many qualities that recommend it as a special dietary source of protein. It contains nine of the ten "essential" and a majority of the twenty-three accepted amino acids that make up proteins. It has been shown to supplement the proteins of many varieties of food material.

All gelatines are not alike. For instance, ready-flavored gelatine dessert powders contain about ⅞ sugar and only about ⅛ gelatine. Knox Gelatine is all body-building protein; it contains no sugar, no artificial flavoring. So it is well to specify Knox by name.

Free—Special Dietary Literature

At your request we shall be glad to mail any or all of the following booklets:—

★ **"Feeding the Sick and Convalescent"**

★ **"Peptic Ulcer Dietary"**

★ **"The Diet in Colitis and Digestive Disorders"**

★ **"Feeding Diabetic Patients"**

★ **"Reducing Diets and Recipes"**

Address Knox Gelatine, Dept. M-5, Johnstown, N. Y.

KNOX
Gelatine
U. S. P.

All Protein—No Sugar
—No Flavoring

there was an absolute increase in the carotene content during curing and storage. It was also found that sweet potatoes may be an excellent, medium, or poor source of carotene, depending primarily upon the variety. The depth of color of the flesh of the sweet potato proved to be a reliable indication of the provitamin A value. As the total pigments increased, carotene increased much more rapidly than the other pigments. Tables showing the results of the analyses are included in this report.

INDUSTRIAL AND ENGINEERING CHEMISTRY

Vol. 40, August, 1948

* Effect of fluctuating storage temperatures on quality of frozen foods. W. A. Gortner, F. Fenton, F. E. Volz, and E. Gleim.—p. 1423.
Oxygen absorption by dehydrated whole egg powders. B. Makower and T. M. Shaw.—p. 1433.
Beta-carotene from sweet potatoes. W. C. Sherman and C. J. Koehn.—p. 1445.

Storage Temperature and Frozen Foods. No data have been available to evaluate the effects on frozen foods of temperature variations in the range of 0° to 20°F. In this experiment frozen pork roasts, strawberries, snap beans, and peas were stored for twelve months at 0° to 10°F., and in a freezer alternately fluctuating between 0° and 20°F. in a repeating six-day cycle. Palatability tests, vitamin analyses, and other tests of food quality were made periodically. Fat rancidity was evident in the pork; ascorbic acid was lost in the strawberries, beans, and peas; and palatability changes in general paralleled the chemical changes. Exposure of the frozen foods to temperatures fluctuating between 0° and 20°F. resulted in quality changes similar to those occurring in food stored at 10°F. The quality of the foods stored under both of these conditions was definitely inferior to that stored at 0°F. It is apparent that exposure of frozen foods to temperatures above 0°F., rather than merely temperature fluctuation, may be a major factor influencing deterioration of food quality.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

Vol. 137, July 17, 1948

* Acute potassium deficiency in diabetic acidosis. Current Comment.—p. 1044.

Vol. 137, July 31, 1948

* Fat in nutrition. H. C. Eckstein.—p. 1220.

Vol. 137, August 7, 1948

* Evaluation of protein hydrolysate therapy for peptic ulcer. E. E. Woldman, D. Fishman, and R. S. Knowlton.—p. 1289.

Potassium Deficiency in Diabetic Acidosis. Diabetic acidosis, particularly after insulin therapy, may be complicated by an acute potassium deficiency. The fundamental reason for such a deficiency is not completely understood, but a few suggestions have been made. One view is that a renal loss of potassium associated with the diuresis, particularly after insulin is administered, is a primary contributory factor to the acute depletion of potassium. Another view is that there is a shift of potassium from the extracellular to the intracellular fluid. This view is supported by investigations which have been made in experimental and clinical conditions in which there is dehydration, as may occur in diabetic acidosis and chronic nephritis. These observations place emphasis on the general concept that human deficiency diseases may sometimes be endogenous in origin rather than due to classical exogenous or dietary lack of essential substances.

Fat in Nutrition. Reviewed here are the various aspects of fat in nutrition. Consideration is given to the composition of the culinary fats, the body facilities for fat digestion and absorption, the physiologic transformation of carbohydrate into fat, catabolism of fat acids, the relative nutritive value of butter fat and the margarines, and utilization of the complex lipids.

Protein Hydrolysate Therapy for Peptic Ulcer. The purpose of this study was to evaluate the effectiveness of the oral administration of protein hyrolysate in the treatment of peptic ulcer. Data, including tables and graphs, are given which were obtained on fifty patients with peptic ulcer. A single dose of protein hydrolysate caused a decrease in the free acid and an increase in the total acid of the stomach. The period of neutralization varied with the amount of protein hydrolysate administered. There was a sharp rise in the free acidity in the stomach after the period of neutralization with protein hydrolysate, and the amount of free acid reached a higher level than the initial level during the fasting state. There were a number of other indications that protein hydrolysate has little value as a therapeutic agent for peptic ulcer; its only value is as a food, in the case of protein deficiency.

THE JOURNAL OF BIOLOGICAL CHEMISTRY

Vol. 174, July, 1948

* The determination of iron in small volumes of blood serum. H. B. Burch, O. H. Lowry, O. A. Bessey, and B. Z. Berson.—p. 791.
The effect of pyridoxine deficiency on the tryptophan-niacin transformation in rats. C. Ling, D. M. Hegsted, and F. J. Stare.—p. 803.
Effect of amino acids on the growth of rats on niacin-tryptophan-deficient rations. L. V. Hankes, L. M. Henderson, W. L. Brickson, and C. A. Elvehjem.—p. 873.
On the failure of DL-homoserine to support growth on a methionine-deficient diet. M. D. Armstrong and F. Binkley.—p. 889.

Iron in Blood Serum. In an attempt to find practical means of distinguishing iron deficiency anemias from other types in large population groups, an investigation was made of the possibility of measuring iron in an amount of blood serum obtainable from the finger. The proposed micro-method, in which ferric thiocyanate is the colored compound measured, is described. One analyst can perform twenty-five to fifty analyses in a day. Although it is known that serum iron levels may undergo considerable hourly and daily variation, serum iron values less than 60 mcg. per 100 cc. are rarely found in well nourished persons. By the proposed method, the standard deviation of replicates was 3 to 5 mcg. per 100 cc. Therefore, serum analysis by the described micro-method should provide a useful and reliable means for determining the occurrence of iron deficiency in large population groups.

JOURNAL OF HOME ECONOMICS

Vol. 40, June, 1948

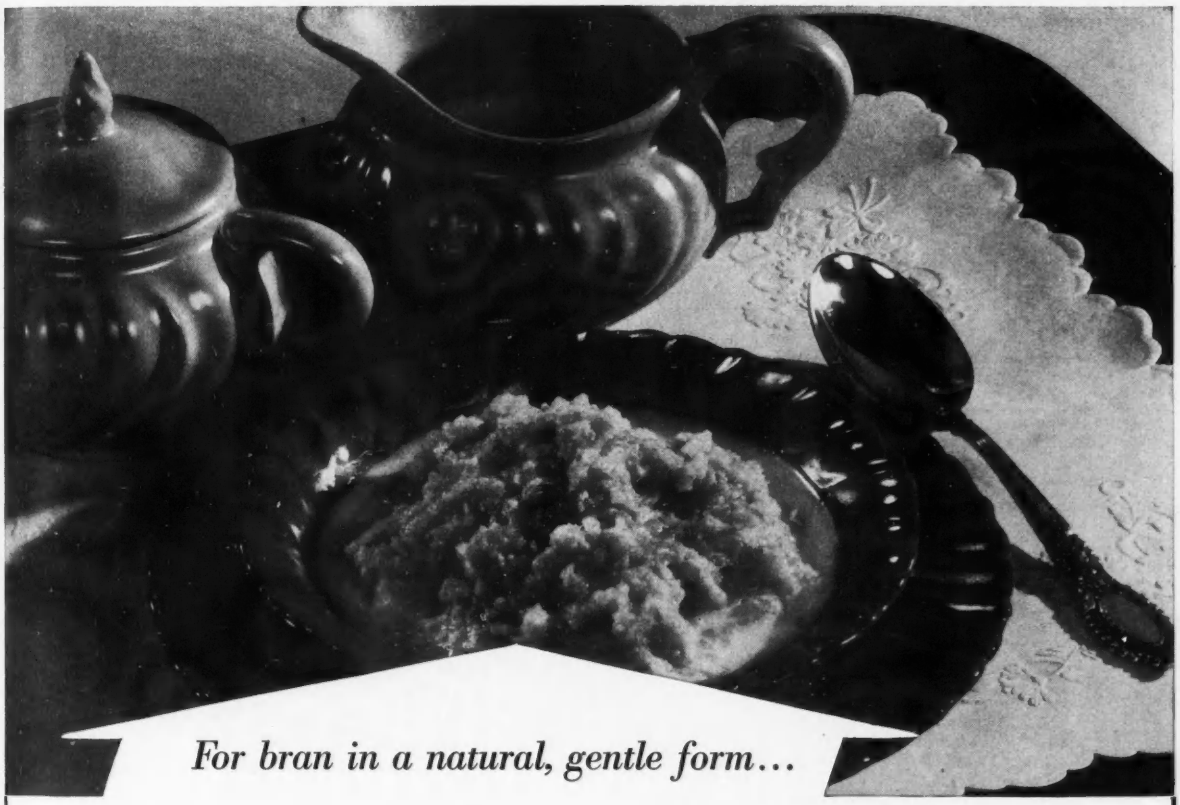
Some cooking and baking utensils studied. E. Sweeney.—p. 309.
* A low-cost diet from commonly used foods. M. A. Rollins.—p. 311.

Low-Cost Diet. A study was undertaken at the New York State College of Home Economics in 1943 and 1944 to determine the relationship of the price of food to the nutritive content. The method of obtaining the necessary information is described. The problem was to provide a ranking of the foods according to the cost of their total nutrient content. No food was consistently a cheap source of more than six of the nine nutrients considered. However, five foods—Irish potatoes, whole wheat bread, rolled oats, beef liver, pig liver, and pea beans—provided six nutrients cheaply, and one other food—rutabagas—provided five nutrients cheaply throughout two years. The forty-four foods selected as cheap sources of nutrients are listed, along with information as to what nutrients each food supplies.

THE JOURNAL OF NUTRITION

Vol. 36, July, 1948

* Experimental rat caries. I. Production of rat caries in the presence of all known nutritional essentials and in the absence of coarse food particles and the impact of mastication. R. F. Sognnaes.—p. 1.



For bran in a natural, gentle form...

SERVE THIS DELICIOUSLY DIFFERENT HOT FLAKED WHOLE WHEAT

You no doubt serve Pettijohn's as many other dietitians do, to give tempting variety to breakfast menus. If so, you have found how quickly appetites respond to its flaky whole-grain texture and nut-sweet flavor.

But do you know of another unique advantage Pettijohn's offers your patients? It gives them bran as Nature intended it to be eaten —warm, moist, *gentle* bran, with the rest of the whole wheat grain, including the wheat germ.

In addition to its natural bran, Pettijohn's contains the whole grain food values of protein, minerals and B vitamins. It is made of choice plump whole wheat kernels steel-cut and flaked exactly as Quaker Oats are. Any serving of food contributing as much as 10% of the minimum daily requirements of a nutrient can be considered an excellent source of that nutrient. On this basis, a dish of Pettijohn's, served with milk and sugar, makes a real contribution to your patients' diets.

Serve Pettijohn's for whole grain nourishment, delightfully different taste and texture, and gentle natural bran. Pettijohn's cooks in less than five minutes and costs only 1c a serving.

★ ★ ★

Contribution of one serving of Pettijohn's* to the minimum daily requirements of an adult

**As served with 4 ounces of milk and sugar.*

Nutrient	% furnished by 1 serving
Thiamin	16.20
Riboflavin	11.60
Iron	11.60
Calcium	19.20
Phosphorous	28.00

PETTIJOHN'S... *Hot Flaked Whole Wheat*

THE QUAKER OATS COMPANY • CHICAGO 4, ILLINOIS

The toxicity of flours treated with various "improving" agents. J. L. Radomski, G. Woodard, and A. J. Lehman.—p. 15.
* Prolongation of the life span of rats by bulk-formers in the diet. A. J. Carlson and F. Hoelzel.—p. 27.
* The total specific dynamic action of high-protein and high-carbohydrate diets on human subjects. N. Gliekman, H. H. Mitchell, E. H. Lambert, and R. W. Keeton.—p. 41.
* Self selection of diet. VIII. Appetite for fats. E. M. Scott and E. L. Verney.—p. 91.
The energy expenditure of 9- to 11-year-old boys and girls (1) standing drawing and (2) dressing and undressing. C. M. Taylor, O. F. Pye, and A. B. Caldwell.—p. 123.
*The biological value of a meat hydrolysate in the infant. A. A. Albanese, L. E. Holt, Jr., V. I. Davis, S. E. Snyderman, M. Lein, and E. M. Smetak.—p. 133.

Experimental Rat Caries. Considerable evidence has been gathered indicating that the conventional type of experimental rat caries is initiated by mechanical injury to the teeth caused by the masticatory impaction of coarse food particles. These experiments show that a purified ration, adequate in known nutrients, is conducive to rat caries, independent of the presence of coarse particles and the impact of mastication. Rat caries was produced by a ration which, besides being adequate in known nutritional essentials, was free from coarse food. Carious lesions developed even when the rat molars were relieved from the impact of mastication. The described lesions were not caused by mechanical injury of the teeth. No difference could be found between the histopathology of the rat caries and presently established findings in man.

Life Span and Dietary Bulk. To supplement previous studies on the life span of rats, observations were made on rats fed a low-residue diet with and without added bulk-formers. The bulk-formers included alfalfa stem meal, psyllium seed husks, ground kapoc, cellulose flour, ground cellophane, and granular karaya gum. The effects of feeding the different diets *ad libitum* or with intermittent fasting, and early or late in life were simultaneously investigated. The results indicated a sex difference in the effect of bulk-formers. In rats fed *ad libitum*, the life span of both sexes was increased when the low-residue diet was supplemented with 10 per cent and 25 per cent relatively smooth bulk-formers; but the life span of females was not increased by the addition of 10 per cent cellulose flour or ground cellophane. The results differed in rats which were intermittently fasted and in those fed different amounts of bulk during different periods of life. No impairment of skeletal growth was produced when diets with 10 per cent bulk-formers were fed only after the rats became forty-two or more days old. A diet with 25 per cent relatively smooth bulk prolonged the life span as much as did fasting one day in three, which was previously found to be the optimum amount of intermittent fasting for rats.

Specific Dynamic Action of Food. The specific dynamic action of two diets containing 7 and 37 per cent of protein calories was measured. Twelve young men, six in each group, were observed for periods of 6 to 7 hr. post prandium, both in a comfortable and in a cool room. The total specific dynamic action of a 1000-calorie meal was calculated to be 169 calories for the high-protein meals, and 103 calories for the high-carbohydrate meals, or 17 and 9.6 per cent, respectively, of the total calories consumed. It is evident that the specific dynamic action of food is not significant in the energy metabolism of active men. It may be concluded that neither high-protein nor low-protein meals increase appreciably the thermal load of men working in a hot environment, or protect men against a cold environment.

Self-Selection of Diet. This series of studies of fat in the diet completes a group of experiments in which appetite for protein, other than casein, and carbohydrates, other than sucrose, was studied. In the experiments presented here, corn oil, cottonseed oil, and butterfat were used as choices in place of or in addition to the hydrogenated fat; in addition, a selection experiment is reported in which the fats were incorporated in mixed diets. Hydrogenated vegetable oil was more generally liked by young rats than butterfat or corn or cottonseed oils. When an unpopular fat was given as a choice, the rats selected much more casein and sucrose than when the choice was hydrogenated fat. In the entire series of studies it was evident that the nature of selections from purified components of a diet did not appear to bear a demonstrable relation to the nutritional of physiologic requirements of the animals.

Meat Hydrolysate in the Infant. The practice of administering protein digests to infants suffering from diseases which cause excessive nitrogen loss seems to make it imperative that the biological value of preparations derived from various proteins be assessed in the normal infant prior to their therapeutic application. In this report the nutritive characteristics of a synthetic milk containing an enzymatic digest of beef muscle as the protein component are compared with those of the evaporated milk formula. The two formulas were tested, using five normal male infants between two and one-half and eight months of age. The study extended over four consecutive seven-day periods. The nitrogen retention and body weight gains induced by the two formulas indicated that by these criteria, the two diets were of equal nutritional quality.

NUTRITION ABSTRACTS AND REVIEWS

Vol. 17, January, 1948

* The influence of diet on parodontal disease. J. D. King.—p. 569.

Vol. 17, April, 1948

Methods of estimating plasma and total red cell volume. E. B. Reeve.—p. 811.

Diet and Parodontal Disease. In this review, the term "parodontal disease" is used to cover all departures from health of the gum, periodontal membrane, cementum and alveolar bone, and of the nervous, vascular, cellular, and other constituents of which these tissues are composed. A summary is given of the literature dealing with the influence of nutritional factors in the development and structure of the dental tissues and their susceptibility to disease. One section is devoted to animal studies; the other section is concerned with observations made on man. The nutritional factors considered in both cases are: vitamin A, vitamin D, the B-complex, ascorbic acid, and fluorine. Attention is given, too, to the physical qualities of food. Although the many studies cited are an indication of the advances made in our knowledge of diseases of the parodontal tissues, much more investigation is necessary. The influences of the oral microflora, of phosphatases, of proteolytic enzymes, and of tissue enzymes responsible for intracellular nutrition and respiration are at present completely unknown, and their possible relationship to constituents of the diet remains a matter of speculation.

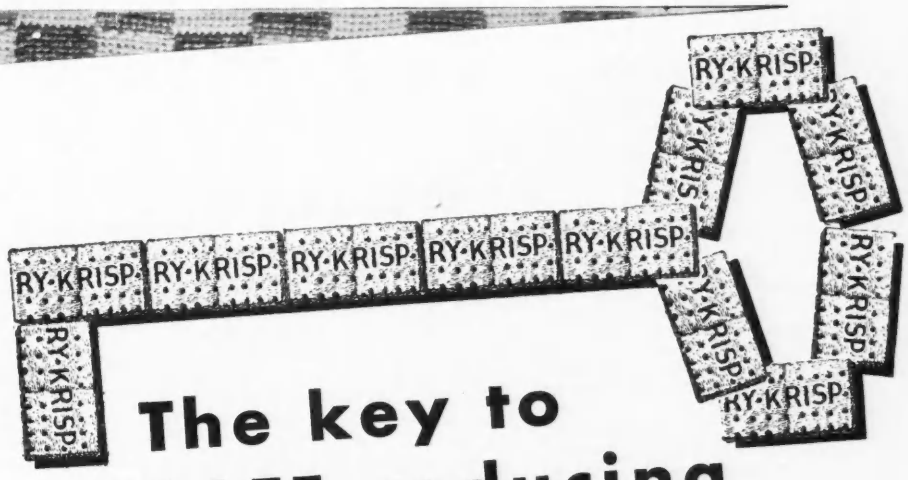
NUTRITION REVIEWS

Vol. 6, August, 1948

* Historical aspects of protein nutrition. E. V. McCollum.—p. 225.
Parenteral nutrition with fat emulsions.—p. 231.
* Is there an association between soil fertility and tooth decay?—p. 239.
Microbiologic vitamin assay methods.—p. 242.

Protein Nutrition. The history of the development of knowledge of the chemical nature and nutritive value of the various proteins is presented. The experiments of various investigators are cited, and most of the important discoveries since 1920 are included.

Soil Fertility and Tooth Decay. The belief has been expressed that high values for calcium and phosphorus in foods contribute to a low incidence of tooth decay. Several investigations have been made which seem to support this theory. In connection with the discussion of the relation



The key to SAFE reducing

As you know, most excess fat is due to unwise eating. To reduce safely and to *maintain* normal weight, a re-education of eating habits is essential.

To help you meet requests for reducing diets that are nutritionally sound, physician-approved booklets have been prepared. They are easy to follow—psychologically helpful in establishing a "new way of life" for overweights.

"DESIGN FOR REDUCING"—1200 and 1800-calorie diets for adults. Gives wide choice of foods by portion so no calorie-counting is necessary; menus and recipes. Send for free copies.

"THROUGH THE LOOKING GLASS"—1500-calorie diets for teen-age girls, written and illustrated in sprightly style to encourage adherence to the diet. Also free to you.

RY-KRISP is indicated as bread in reducing diets because there are only 23 calories in each double-square wafer. These crunchy wafers supply bulk for satiety and all the protein, minerals and B complex vitamins of whole-grain rye.

RALSTON PURINA COMPANY, Nutrition Service
JAD-1 Checkerboard Square, St. Louis 2, Mo.

Please send free:
_____copies "Design for Reducing" C566
_____copies "Through The Looking Glass" C966

*Name*_____
*Title or Position*_____
*Hospital or Organization*_____
*Street*_____
*City*_____ *Zone*_____ *State*_____

of soil fertility to tooth decay, factors affecting soil fertility are considered. It is suggested that further information as to the relation of soil fertility to food composition might be obtained if the data used in compiling the "Tables of Food Composition in Terms of Eleven Nutrients" (*U.S.D.A. Misc. Pub. 572, 1945*) were segregated in relation to the district in which the original foods were produced.

PUBLIC HEALTH NURSING

Vol. 40, July, 1948

* Changing attitudes toward nutrition. C. G. King.—p. 357.

New Trends in Food Research. For a number of years the primary concern of nutrition scientists has been focused upon food requirements for growth. It is now evident that growth and external appearances may leave impairment to the health of the body unidentified. Therefore, new trends in nutrition research include emphasis upon protection against the degenerative diseases of old age and provision for maximum resistance against infections. Observations have shown the relation of diet to maternal and infant death rates, to tuberculosis, to skin conditions, to dental caries, to clinical anemias, to sprue, and to diseases of the liver and kidneys. There is a growing trend in the direction of using small primates as experimental animals for studies of nutrition in relation to health. This is encouraging because primates, such as the marmoset, have many advantages from the anatomical and nutritional points of view. If nutrition is to play its proper role in the improvement of health, four major improvements should be made in day-to-day eating habits. These include: (a) avoidance of overeating, as measured by excessive body weight; (b) regular consumption of green leafy vegetables, unspoiled by excessive cooking; (c) regular consumption of a reasonable quantity of animal protein foods such as milk, meat, fish, and eggs; and (d) more generous provision for a regular intake of fresh citrus fruits or juices, or comparable products.

SCIENCE

Vol. 108, August 6, 1948

* Vitamin B_{12}, a cobalt complex. E. L. Rickes, N. G. Brink, F. R. Koniuszy, T. R. Wood, and K. Folkers.—p. 134.
* A new method of reporting data on reproduction and lactation in the mouse. L. Mirone, F. P. Panzarella, and L. R. Cerecedo.—p. 139.

Chemical Nature of Vitamin B_{12}. The authors of this report recently described a crystalline red compound, vitamin B_{12}, which they had isolated. It was shown to be highly active for producing hematological responses in patients with pernicious and other anemias. Further investigation has been made of the chemical nature of the vitamin which appears to be a cobalt coordination complex. The presence of cobalt in vitamin B_{12} reflects significantly upon many biological studies which have shown that cobalt is an essential trace element in nutrition. It is pointed out that the nutritional significance of cobalt must be re-evaluated as the biological function of B_{12} is developed.

Reproduction and Lactation in the Mouse. The common practice among laboratories studying the nutritive requirements of the mouse for reproduction and lactation has been to consider all survival failures as being due to the inability of the mothers to nurse the young, and consequently, as indicative of the inadequacy of the diet to provide normal lactation. However, the persistency with which newborn mice died during the first four days of life cast suspicion on the reproduction rather than on the lactation performance. Considerable data have been collected to show that the maternal diet exerts a great influence on the health of the newborn. The fact that the nutritional requirements for a normal gestation leading to the birth of viable young are more stringent than those for lactation is supported by the following experiment. Of 127 mice whose litters succumbed during the first four days of life, fifty-seven were able to rear foster litters born to females kept on stock or good experimental diets. This seems to justify the conclusion that the deaths of the natural litters were not due to a poor lactation performance. This report also includes directions for a new system of reporting data on reproduction and lactation and gives a comparison of the old and new system.

SOUTHERN MEDICAL JOURNAL

Vol. 41, June, 1948

* Observations on the antianemic properties of vitamin B_{12}. T. D. Spies, R. E. Stone, and T. Aramburu.—p. 522.

Anti-Anemic Properties of Vitamin B_{12}. Five patients in the studies presented in this article were distributed as follows—two cases of nutritional macrocytic anemia, one case of non-tropical sprue, and two cases of Addisonian pernicious anemia. The patients were admitted to the hospital where rigid dietary control was initiated and maintained throughout the course of the study. Meat, meat products, fish, and poultry were excluded from the diet. Only one egg, two glasses of milk, and 1 Tbsp. of butter were allowed daily. All other foods were given in the amounts desired by the patient. The intramuscular injection of a sterile solution of crystalline vitamin B_{12} to two cases of Addisonian pernicious anemia was followed by positive hematologic response, as was true in two cases of nutritional macrocytic anemia and one case of non-tropical sprue.

THE AMERICAN RESTAURANT MAGAZINE

Vol. 32, July, 1948

* The need for precosting menus. H. W. Espersen.—p. 42.

Precosting Menus. If the price of each article on the menu is calculated at the time the menu is being planned, then the menu selections and combinations can be adjusted accordingly, before the menu is printed. Because of the high food markets, it is important that menu price increases be based on an accurate figuring of food costs. Directions are given for figuring the cost of various items and for converting the cost of each à la carte item and each fixed-price meal or combination into its cost per dollar of sale.

HOSPITALS

Vol. 22, July, 1948

* The steps that give continuity to department control. D. T. Odle.—p. 58.
* Kitchen floor plan for small hospitals. Dietetics comment.—p. 64.
* Dietary department aids. Reference guide.—p. 72.

Vol. 22, August, 1948

* Recruiting career dietitians. E. Perry.—p. 64.
* Getting maximum efficiency out of fewer cost records. H. W. Espersen.—p. 69.

Planning and operating a dietary budget. M. Gillam.—p. 74.

Departmental Control. Cost of food and labor can be reduced with proper controls, including the keeping and then using of adequate records. Careless handling, ignorance, dishonesty, or poor standards are common causes of economic leaks. Adequate employee direction and supervision will help to prevent losses from wasteful methods and carelessness. The executive dietitian in controlling food costs must understand an accounting system and be sure it is accurate; and she must realize that the figures do not measure the changing prices nor the efficiency of the dietary department. Equilibrium is kept best in the department where there are not too many changes that upset customs,

Liver Integrity and the Protein Intake

That the prognostic outlook in fatty infiltration of the liver and in portal cirrhosis is no longer poor is a reflection of the significant advances made in the treatment of these conditions. Modern-day therapy is based on the recognition of the role played by lipotropic agents, such as choline, when given in conjunction with a diet high in biologically complete protein and low in fat.

While formerly carbohydrate was considered the chief factor in the maintenance of hepatic function, protein is now regarded one of the most important dietary principles in safeguarding the integrity of the liver. Unless given with adequate amounts of protein, carbohydrate alone is ineffective. For this reason, the modern dietary of many hepatic affections provides protein in abundance in addition to carbohydrate.

Lean meat enjoys an outstanding position in the protein-rich dietary for many reasons: It provides a generous proportion of biologically complete protein—25 to 30 per cent of its cooked weight. Meat is of remarkably high digestibility—from 96 to 98 per cent—imposing no added burden on the patient.

Meat also is an excellent source of three vitamins of the B complex: thiamine, riboflavin, and niacin, and in addition provides notable amounts of the important minerals phosphorus and iron. The taste appeal of meat is high, an advantage in diseases accompanied by lack of appetite.

The Seal of Acceptance denotes that the nutritional statements made in this advertisement are acceptable to the Council on Foods and Nutrition of the American Medical Association.

American Meat Institute

Main Office, Chicago... Members Throughout the United States

policies, and not too many changes among supervisors. The value of work simplification studies and flow process charts is presented.

Kitchen Floor Plan. A floor plan for a sixty-bed general hospital is illustrated in this article. It demonstrates how good work sequence can be accomplished and backtracking eliminated. The two disadvantages of the plan are pointed out. The dishwashing room in the kitchen is not separated from the rest of the kitchen, and no separate refrigerator has been specified for dairy products.

Reference Guide on Food Service. This bibliography on food service is especially designed for administrators who are interested in food service problems. The references are divided into six groups, covering most of the steps necessary to establish a modern and efficient dietary department. These groups are: (a) planning, (b) organization, (c) personnel administration, (d) food cost accounting, (e) sanitation, and (f) equipment.

A.D.A. Public Relations Program. Elizabeth Perry, Chairman of the A.D.A. Public Relations Committee, describes the work being done by the national and state associations in creating public interest in the dietetic profession. The successful programs which have been carried on by the various states are mentioned, not only in regard to vocational guidance but also with respect to cooperation with allied professions. Miss Perry emphasizes the importance of the continuation of the public relations program if the shortage of dietitians is to be overcome.

Food Cost Records. Because of the many types of meals that are served in a hospital, food cost accounting cannot be as simple as if only one type were served. However, the hospital food cost accounting system is more likely to succeed if a minimum of forms are involved. There is a brief discussion of the four preliminary forms which are required to produce a satisfactory control system: purchasing, receiving, issuing, and inventory forms. This is followed by a more detailed description of the special forms which are used in this simplified system. These forms show the following: (a) distribution of daily purchases, (b) distribution of issues and transfers, (c) summary of purchases and issues to date, and (d) daily food report. These forms are also illustrated.

HOTEL MANAGEMENT

Vol. 53, June, 1948

* How new thinking in food service can turn liabilities into assets. W. O. Voegele.—p. 55.

Dressing up plentiful, inexpensive foods for more inviting dishes. A. Easton.—p. 60.

* How scientifically developed food purchasing standards cut costs. R. E. Worden.—p. 64.

Vol. 53, July, 1948

The seven "Ss" of sound personnel training. A. H. Clawson.—p. 41.

* The fundamentals of planning menus. A. Easton.—p. 60.

New Features in Food Service. A pictorial study is presented of a unique restaurant in Buffalo, New York. Many unusual fast-service features are presented which may be considered in building or redesigning any restaurant or dining room. In addition to the physical plan, certain personnel features are emphasized. Every employee was personally trained for one week before the restaurant was opened. During the training period department store employees, their families, and friends were the customers for half the regular menu prices.

Food Purchasing Standards. The standardization of food materials for use in cutting costs while maintaining quality is discussed here. Specific application is made to raw materials. Using potatoes as an example, tests were made for yield only, for cost of preparation, for total prepared cost, and for the effect of size on yield. The net result of these sample studies indicated that the ingredient classified itself, by variety, size, and grade, as to desirability of purchase when contrasted with fluctuating market prices. Consequently, a purchasing control chart could be developed by which purchasing could be performed with a view to the total prepared cost. It is evident that development of material standards, with attendant research into equipment and methods, can well be one answer to lower operating costs.

Planning Menus. The basic rules to follow in planning menus are outlined. Specific points to consider in planning a day's menus are presented. A special feature of the article is a section which lists dishes that women like and dishes that men prefer.

THE HOTEL MONTHLY

Vol. 56, June, 1948

* Five steps to effective institutional food buying. A. Frooman.—p. 35.

Vol. 56, July, 1948

* Five steps to effective institutional food buying. A. A Frooman.—p. 22.

* Precision control over food supplies.—p. 42.

Effective Buying. This is the second article in a series of five articles pertaining to effective institutional food buying. Particular emphasis is placed on the "second step"—that of determining what best fits one's needs; and on the "third step"—that of written specifications covering foods regularly used and purchased. Also included in this article are food charts giving information on food servings and on costs per serving of canned goods.

Institutional Food Buying. This article, the third in this series is concerned with the fourth step, that of working out a buying procedure and deciding on a course of action. The following purchasing methods are described: (a) competitive formal or informal buying by bids, (b) open market buying, (c) negotiated buying, (d) special "blank-check" buying, and (e) cost-plus buying. Furthermore, sixteen points to consider before adopting a particular buying procedure are enumerated and discussed.

Merchandise for Dining Cars. A new commissary has been opened in Chicago to service the Santa Fe railway's fleet of dining cars, operated under the supervision of Fred Harvey Company. The article includes illustrations and descriptions of the numerous features of the new commissary and the plan of operation. Of special interest are the dining car supply order sheets for perishable and staple foods, the equipment issue sheet, the order sheet for dining car locker goods, and the dining car laundry list.

THE MANAGEMENT REVIEW

Vol. 37, June, 1948

*How to write a good job description.—p. 297.

Vol. 37, July, 1948

*When suggestion systems fail. R. B. Shapiro.—p. 361.

Writing a Job Description. Job evaluation is no longer being confined to people who work by the hour. Plans for rating supervisory jobs are receiving more attention. Because responsible supervisory jobs are often particularly hard to describe, a few suggestions should be most helpful. Outlined here is a plan whereby 15 min. to 1½ hr. a day for five days can be devoted to developing a job description. Of particular interest are the concrete suggestions for sentence style and paragraph content within the job description. Several questions are included to be used as a final check on the quality of the completed job description.

Suggestion Systems. Suggestion systems can be a healthy cathartic to an organization if they are used properly. Success of such systems is in direct ratio to the level of development or lack of development of industrial democracy in the particular organization involved. Sixteen

"Meet my five-star Hotpoint kitchen"

You're really in business once you install the beautiful new Hotpoint Electric Counter Kitchen. Customers are delighted because they are served tastier food in short order . . . from lustrous, chrome-finished cooking equipment. And you'll be delighted, too, with the record-breaking performance of these amazing custom-matched devices.

• • All five Hotpoint appliances are identical in size—each may be purchased separately. Hotpoint's Fry Kettle offers an exclusive lift-out fat compartment—production capacity up 72%. The compact Griddle and versatile Griddle-Grill preheat to 400° in 6 minutes! The high-speed Hotplate and eye-catching Waffle Baker complete the 5-star line of custom-matched devices.

• • Discover for yourself the spectacular savings the Hotpoint Counter Kitchen brings in labor, food and general maintenance costs. Begin now to install a Counter Kitchen by Hotpoint. You can order the units you need today . . . and expand your Counter Kitchen as business grows. Mail coupon for folder giving complete details.

Hotpoint Inc. ***(A General Electric Affiliate)*****, Chicago**

5 Money-Making Units in One Custom-Matched Bank —Only 7½ Feet Long

1. **HK3 Fry Kettle**—$99.95*. Preheats to 350° in just 8 minutes. Cuts fat consumption 25% to 60%.
2. **HH1 Hotplate**—$69.95*. Hi-Speed Calrod** Units *cook food as fast as it can be cooked.* "Measured heat" gives rock-bottom economy.
3. **HG2 Griddle**—$79.95*. Exclusive depth-styling provides 212 sq. in. of usable frying area with over-all width of less than 18 in.
4. **HG3 Griddle-Grill**—$134.95*. Combines tremendous speed of grill with large frying area of griddle.
5. **HY1 Waffle Baker**—$99.95*. Exclusive Batter Brain makes waffle baking almost completely automatic.

*Suggested list prices. All prices F.O.B. Chicago include Federal Excise Tax.
**Reg. U.S. Pat. Off.

Custom-Matched Beauty By

Hotpoint

OLDEST AND LARGEST MANUFACTURER OF COMMERCIAL ELECTRIC COOKING EQUIPMENT

MAIL TODAY!

HOTPOINT INC., Commercial Cooking Equip. Dept.
5692 West Taylor Street, Chicago 44, Illinois

Without obligation, please send me your free folder describing the new Hotpoint Electric Counter Kitchen.

NAME_____

ADDRESS_____

CITY_____ STATE_____

essentials of a suggestion plan which are frequently overlooked are presented in outline form. The items listed serve to illustrate reasons why many suggestion systems fail.

THE MODERN HOSPITAL

Vol. 71, July, 1948

* The twenty-five bed hospital.—p. 48.
Terminal sterilization of formulas. R. H. Lowe.—p. 57.
* Soybeans in peace or war. M. S. Ehlers.—p. 96.
Purchasing a pressure pan.—p. 100.
* Combining jobs for better service. D. I. Anderson.—p. 110.

Twenty-Five Bed Hospital. This discussion of how to establish a small community hospital includes a floor plan of the kitchen. Accompanying the plan is a legend which lists the equipment and includes dimensions.

Soybeans. This review contains information on the protein content of soybeans, methods of preparation, and a description of such soybean products as green soybeans, soy flour, soy grits, soy butter, soy milk, and soy sprouts. Directions for sprouting soybeans are given, and a bibliography of literature on the use of soybeans and soybean products is included.

The Dietitian-Housekeeper. Many small hospitals that feel they cannot afford a dietitian can often use a dietitian-housekeeper. The dietitian has a background of training which qualifies her for this combination of responsibilities. Advantages of this arrangement to the hospital and to the dietitian-housekeeper are suggested. In addition, a situation where this arrangement has worked successfully is described. The Renton Hospital, Renton, Washington, has one hundred beds and thirty bassinets. Under the new organization, the head dietitian became the dietitian-housekeeper. Her duties and those of the assistant dietitian are listed. One employee was added to the staff when the change was made—a dietitian aide. Her duties are described also.

PERSONNEL

Vol. 24, May, 1948

*Self-analysis quiz for supervisors and executives. R. Hersey.—p. 454.

Vol. 25, July, 1948

* A guide to successful conference leadership: II.—p. 31.

Self-Analysis Quiz for Supervisors. The purpose of the test outlined here is to help one review some of the personnel and management functions a supervisor and executive must perform. Part I deals with knowledge of good supervisory practices; Part II is concerned with knowledge of managerial principles and indicates analytical ability. There are eighty-seven questions in all, and the section of answers to these questions also contains a discussion of the subject involved.

Guide to Conference Leadership. Featured here is a digest of the second section of the manual used in Standard Oil Company of New Jersey's effective course in conference leadership. The first section appeared in the March issue of *Personnel*. Tools and aids employed by the conference leader are described. The use of questions as a means of directing and stimulating discussion is one technique which is illustrated; another is the use of questions in which the leader can phrase his ideas without being dictatorial. Key words to use in phrasing questions are listed. Instructions for using charts and films are also presented. Case studies are considered, and a sample case study is included. In addition, mention is made of the use of guest speakers, the pro and con analysis, examples to illustrate points under discussion, and rephrasing of statements for brevity and clarity. Examples of a leader's self-rating scale and an evaluation sheet to be used by a conference critic in evaluating the leader's performance, are given.

PERSONNEL JOURNAL

Vol. 27, June, 1948

*The field review method of employee evaluation and internal placement. G. W. Wadsworth, Jr.—p. 47.
Management and job evaluation. L. Cohen.—p. 55.
*Discipline—the staff likes it. H. Goett.—p. 64.
Job evaluation discussion.—p. 67.

Employee Evaluation and Internal Placement. The need for an adequate employee evaluation and internal placement program is apparent to anyone responsible for developing and maintaining an effective working force. In order to obtain fair and factual evaluations and follow-up of employee hirings, it is suggested that the Field Review Method be used. This method is a combination of employee evaluation and placement activity, in which expressions of employee value or of success on the job are developed. In elaborating upon the use of the Field Review Method the author lists the essentials for employee evaluation and the requirements for good placement. The article is to be continued in a later issue.

Discipline. Discipline, as defined by the author, is the necessary action taken by a supervisor in dealing with excessive absence, tardiness, low production, errors, poor work habits, a noncooperative attitude, the evasion of rules and regulations, and any other thing which is harmful to the company, its customers, or the personnel Most people are honest and want to do their share, but they expect the supervisor to take necessary action in individual cases where it is necessary. If the supervisor hesitates to do this, he not only loses the respect of his staff, but will find that they will join and copy the winner who, in this case, is not the supervisor. Properly applied, discipline is a very effective tool for improving staff attitude, production, attendance, and interest in reducing errors. The members of the staff know that discipline is the supervisor's job and look to him to do his job.

Vitamin C in Rheumatic Fever

Ten or more years ago Rinehart and associates published papers on vitamin C deficiency as a possible factor in rheumatic fever. In their experimental animals a combination of injection and vitamin C deficiency produced lesions similar in type and distribution to those of rheumatic fever. Other pathologists in reviewing this material were less impressed by the similarity.

In the light of this experimental work, Faulkner studied the effect of large doses of vitamin C (200 to 300 mg. per day) in twenty-seven patients with rheumatic fever and observed no influence on the course of the disease.

The present belief is that adequate doses of vitamin C are as essential in the diet of patients with rheumatic fever as in any other acute or subacute disease, but that massive doses above the normal requirements have no specific effects.—*From Queries and Minor Notes, J.A.M.A. 137: 1100 (July 17), 1948.*

at last!

patients can enjoy tasty low-salt diets

westsal
TRADE MARK

new and ONLY sodium-free
salt substitute that tastes
exactly like table salt

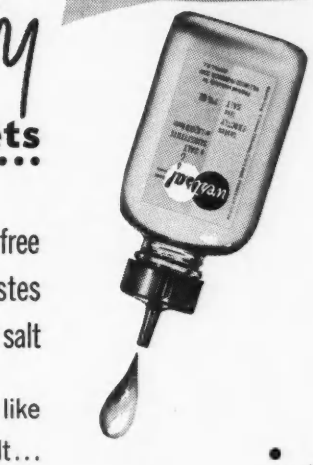
that makes food taste exactly like
food seasoned with salt...
no bitter, disagreeable taste.

WESTSAL—in convenient liquid form—can
be used as safely and freely as salt...
at the table, in cooking and baking.
WESTSAL enables patients with

CONGESTIVE HEART FAILURE
HYPERTENSION
TOXEMIAS of PREGNANCY

1. to adhere faithfully to low-salt diets
2. enjoy food and be adequately nourished
3. keep harmful sodium intake at a minimum

WESTSAL is a solution of lithium chloride with small amounts of citric acid and potassium iodide (iodizing traces)
● Bottles of 2¼ oz.



● send for tasting samples and just taste it!
●
WESTWOOD PHARMACAL CORP.
468 Dewitt St., Buffalo 13, N.Y.
Subsidiary of Foster-Milburn Co.
●

News Notes

Dr. Hunscher Appointed to VA Medical Advisory Group. The early part of August, Dr. Helen A. Hunscher, A.D.A. President, was honored by being appointed a member of the Special Medical Advisory Group of the Veterans Administration. Dr. Hunscher's appointment means that the profession of dietetics is now represented on this overall Medical Advisory Group which functions separately from the Dietetic Advisory Council.

Women's Medical Specialist Corps. Announcement has been made of the revision of requirements for commissions in the Women's Medical Specialist Corps of the Army. Beginning on August 13, 1948, a dietitian wishing to join the WMSC no longer faces the requirement of prior military experience. Appointment will be tendered to applicants who are under twenty-eight years of age at the time of commissioning, who are physically qualified for general duty, and who have an unmarried status with no dependent children under fourteen years of age. These young women will first be commissioned in the Reserve Corps and can make application for appointment in the Regular Army after a minimum term of six months on extended active duty. Those wishing to apply should write to the Office of The Surgeon General, Department of the Army, Washington 25, D. C., Attention: Chief, Women's Medical Specialist Corps.

New Director WMSC. Early in September, Major Eleanor L. Mitchell was appointed Chief, Dietetic Section, Women's Medical Specialist Corps. With this appointment, Major Mitchell's rank was raised to that of Lieutenant Colonel. She replaces Lt. Col. Helen C. Burns, recently retired.

Director-General, WHO. Dr. Brock Chisholm, who served as Executive Secretary of the World Health Organization Interim Commission, has been elected the first Director-General of WHO. Dr. Chisholm is a Canadian psychiatrist.

The permanent headquarters of WHO will be in Geneva, Switzerland, but regional groups will be set up in the Western Hemisphere, Africa, the Eastern Mediterranean, South East Asia, the West Pacific, and Europe. However, a temporary administrative office for Europe will be given priority over establishment of these permanent regional bodies because of the urgent needs of war-torn European countries.

Food and Container Institute. Lt. Colonel Joseph S. Kujawski has been appointed Commanding Officer of the Quartermaster Food and Container Institute, Chicago. Until this appointment, he has been Officer in Charge of the Military Research Office of the Institute. He replaces Colonel Charles S. Lawrence, who has been in command since February 15, 1946. Colonel Lawrence will serve as President of the Quartermaster Board at Camp Lee, Virginia.

Announcement has also been made of the appointment of Dr. Morton M. Rayman as Chief, Microbiological Branch of the Food Research Division, Quartermaster Food and Container Institute. In this position, Dr. Rayman will direct research concerning the nature of and factors affecting the microbiological and histological changes which occur during the processing and storage of foods for use by the Armed forces.

M. Faith McAuley Fund. The Illinois Dietetic Association is sponsoring the establishment of the M. Faith McAuley Loan Fund for graduate students in food administration. The A.D.A. will administer the fund in conformity with the policies of the Illinois Memorial Fund Committee. A graduate of any college or university who gives evidence of outstanding ability, adequate preparation, and experience for graduate work will be eligible for consideration. The recipient of a loan from this fund may select any college or university approved by the A. D. A. Committee on Loan Fund for Graduate Study. Contributions will be accepted in any amount and should be sent to Ella M. Eck, Chairman, 950 East 59th Street, Chicago 37. Checks should be made out to M. Faith McAuley Fund, Illinois Dietetic Association.

Promotion for Dietitian WAC. The JOURNAL office has received word of the promotion of Edna Cox from the rank of Captain to that of Major in the Women's Army Corps. Major Cox is with the Quartermaster Depot in Chicago.

Dietetic Interns Graduate. Two dietetic interns received certificates at the regular graduation exercises of *Texas State College for Women*, Denton, on August 26. They are: Pauline Adams and Marjorie Collins. In addition, they were honored at a coffee party held at the college Tea Room.

At *Barnes Hospital*, St. Louis, eight dietetic interns completed their training on August 31. They are: Lucille Drakesmith, Iowa State College; Verna Grage, North Dakota Agricultural College; Natalie Hambly, University of Massachusetts; Jo Ann Grimes, University of Nebraska; Mary Katherine Smith, Oklahoma A. and M. College; Carol Stegall, Louisiana Polytechnic Institute; Wylodene Sturdivant, George Peabody College for Teachers; and Rosemary Taylor, Indiana University.

Prospective Dietitians. The class of eight in Organization and Management, School of Home Economics, Ohio State University, this spring took over the management of one of the restaurants in Columbus for one day. Newspaper publicity of the event showed the girls in

Army Announcements Concerning Personnel

The following Medical Department Dietitians were promoted during July, 1948:

Captain to Major

Aldrich, Myrtle
Davis, Helen M.
Dautrich, Helen A.
Lovett, Hilda M.
Mitchell, Eleanor L.
Smith, Grace
Wickliffe, Nell

First Lieutenant to Captain

Creech, Kathleen R.

The War Department has released the following official list of names of Medical Department Dietitians (not previously announced) who have been separated from service:

First Lieutenants

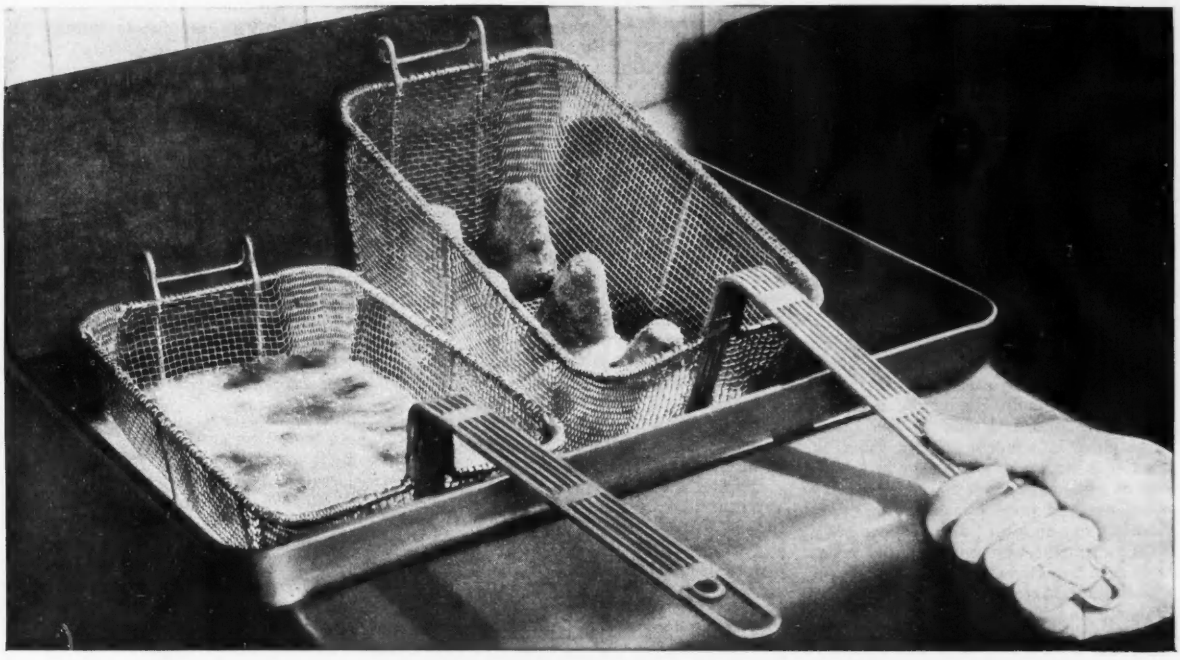
Goodwin, Marjorie, R-2400, Rt. #1., Box 126, Manteca Calif.
Ice, Rachel M., R-2280, 317 Archer Dr., Osborn, Ohio
Pabst, Marjorie A., R-2433, 63 Pasadena Ave., Youngstown, Ohio
Sheret, Virginia, R-2399, R.D. #2, Meehoppen, Pa.
Skadeland, Lois J., R-2061, R.D.F., Ridgeway, Iowa
Willis, Leah T., R-416, 1180 N. Sunset Dr., Winston-Salem, N. C.

The following dietitians, previously reported as separated, have been appointed in the Women's Medical Specialist Corps Reserve, and have requested active duty:

Fanning, Mary C.
Goodale, Harret J.
Marshall, Elizabeth C.
Motley, Dellamae

PRIMEX-Fried Foods Look Good—Taste Good!

Think of *any* important characteristic you look for in a frying fat and you'll find it in Primex.



GOOD FRYING RESULTS?

The bland, neutral flavor of Primex, its low absorption at proper frying temperatures, and its digestibility answer that question. Foods fried with Primex *look* good, *taste* good.

ECONOMY?

Pound for pound, no other frying fat can turn out more fried foods than Primex. This all-vegetable, all-hydrogenated fat is famous for its long frying life. It's made to stand up under the most severe frying schedule.

STABILITY?

Primex won't break down prematurely at proper frying temperatures . . . won't smoke up your kitchens . . . won't gum up your frying kettles.

From every conceivable angle, you'll approve Primex performance in your frying kettles. A single month's trial will convince you. PROCTER & GAMBLE

PRIMEX *All-Vegetable All-Hydrogenated*

THE FRYING FAT THAT SETS THE QUALITY STANDARD

such activities as shopping at the wholesale market, performing duties as hostesses, instructing waitresses, and preparing food. Three of the girls have already been accepted as dietetic interns in approved courses, and two others plan to enter internships within the next year.

Lydia Gibbon Willits. Word has been received from Oakland, California, of the death of Lydia Gibbon Willits on August 8 at the Alameda Hospital, Alameda, California. Mrs. Willits had been an A.D.A. member since 1935 and a life member since 1942.

Leaflet on Potatoes. In an effort to help move the abundant potato crop, the U. S. Department of Agriculture has issued a leaflet titled "Potatoes in Popular Ways." It contains facts about the advantages of serving potatoes and how to store and cook them, as well as nineteen potato recipes in quantities to serve six. The leaflets are available from the Superintendent of Documents, Washington 25, D. C., at a cost of $1 per 100 copies.

Safety Booklet for Bakeries. The American Mutual Liability Insurance Company, Boston, has recently issued a thirty-six-page booklet titled *Foremanship and Accident Prevention in Bakeries.* It is written in an attempt to help the supervisor to help the workers understand safe practices and to use them. It includes information on the types of accidents most likely to occur in a bakery, as well as information on preventing accidents and good housekeeping practices. One chapter deals specifically with sanitation and making food products safe to eat. Other chapters cover "Handling Materials," "Bakery Machines," and "Equipment."

Rural Food Habits. A survey conducted by the Department of Agriculture, in cooperation with the California, Nebraska, and Rhode Island Experiment Stations, indicates that meals of farm families differ in different parts of the country. A total of 3845 meals were reported by 645 families.

Substantial breakfasts were the rule in more than three-fourths of the households, with the Nebraskans eating the heaviest breakfasts and Rhode Islanders the lightest. The heavy meal of the day was served most often at noon in Nebraska and at night in California and Rhode Island. Light meals were most frequent in Rhode Island, perhaps because the families surveyed were a little older, more than a fifth of the homemakers being over sixty years.

Foods served most often for breakfast by all families were: cereal, eggs, bread of some kind, and coffee. Next most often served were: fruit or tomato juice, and bacon, sausage, ham, or other meat or fish. The families in Nebraska ate more cereal for breakfast and Californians more eggs and meat. Tomato and fruit juices were reported most frequently in Rhode Island breakfasts.

Regional differences showed up in the survey. Potatoes were served most often in Nebraska, while in Rhode Island, corn bread (traditional Johnny cake) was popular although it was rarely reported from the other two states. Lamb was served by 21 per cent of the California families, by 12 per cent of those in Rhode Island, and by none in Nebraska. Fish and other sea food was reported frequently in California and Rhode Island but rarely in Nebraska. California families used more fresh fruit and vegetables and more fruit in salads. Such foods as artichokes and avocados appeared on many California menus but in almost none from the other states.

Family incomes affected meals in all three regions. Those families with the highest incomes used more fruits and vegetables, particularly green and yellow vegetables, while low-income families served more bread, cereals, and potatoes.

Vegetable Cookery. A study of four methods of cooking cabbage has been conducted at the Virginia Experiment Station. A modified "old-fashioned" method was found to give most satisfactory results in both flavor and nutritive value. The old-fashioned method of cooking cabbage and other vegetables, such as greens and snap beans which is still used in the South, is to combine salt pork, the vegetable, and a large amount of cold water and cook together for about 2½ hr. Extension specialists have suggested a modification of this method which will still give the meaty flavor but would not overcook the vegetable and cause serious loss of ascorbic acid. They suggest simmering the fat meat and water together for 2 hr. and then adding the cabbage (cut in sections rather than shredded) and cooking until just tender. Cabbage cooked in this way showed no loss of minerals and retained more ascorbic acid than that cooked by other methods. Cutting cabbage in sections rather than shredding results in less loss of nutrients.

When coarsely shredded cabbage was cooked until just tender in a covered kettle with just enough water to cover and when it was cooked in an open kettle more of the nutritive value was lost than in the above method. In the open-kettle method, too, more phosphorus was lost. In addition, by these methods the rich meat flavor was lacking.

"Fried cabbage" was also tested and rated below the other three methods. By this method chopped cabbage is cooked in a moderate amount of water in a covered pan for 20 min., then meat fryings are added for seasoning, and the cabbage simmered for 30 min. longer.

Canned Tomatoes. The Bureau of Human Nutrition and Home Economics has made a study to compare palatability of cold- and hot-packed tomatoes and also the effect of adding ascorbic acid. Cold-packed tomatoes were preferred by experienced food judges on every count—flavor, color, texture, odor, and general acceptability—and those tomatoes which had been stored for a year received higher ratings than similar packs stored only two months.

The addition of ascorbic acid had little or no effect on color or flavor of the tomatoes canned by the cold-pack method.

It is pointed out, however, that the hot-pack method is better in one respect. More tomatoes can be put into each jar, which may be advantageous if jars or storage space are limited.

Marketing of Vegetables. Research conducted by the Department of Agriculture has shown that pre-packaged vegetables, held for selling at a temperature of 42°F., keep two to three times longer than when held on the customary open display counters. Broccoli, Brussels sprouts, and cauliflower, packaged in various transparent films, were tested. In one batch, held at 67°F.—the average temperature in markets during the fall and winter—none of the vegetables were salable after four days. The vegetables in another batch were held at 42°F.—the average temperature of home refrigerators. The packaged cauliflower held at this lower temperature remained fresh in appearance and flavor for eight days, and the Brussels sprouts and broccoli for eleven days.

Tests were also made of these vegetables without wrapping, and all lost weight rapidly, both with and without

New Appointments, Veterans Administration

The following hospital appointments of dietitians (not previously announced) have been made by the Veterans Administration:

Name	Position	Location
	Branch No. 3	
Marion E. Jones	Acting Chief Dietitian	Wilmington, Del.
Catherine Kelly	Staff Dietitian	Lyons, N. J.
	Branch No. 4	
Lillian Michelson	Staff Dietitian	Ft. Howard, Md.
	Branch No. 5	
Mary Lou Hardee	Staff Dietitian	Kennedy, Memphis, Tenn.
Elizabeth C. Marshall	Staff Dietitian	Lake City, Fla.
Doris Reeves	Staff Dietitian	Kennedy, Memphis, Tenn.
	Branch No. 8	
Eleanor Fonti	Staff Dietitian	St. Cloud, Minn.
Edna May Snead	Staff Dietitian	Minneapolis, Minn.
Elizabeth L. Zehnle	Staff Dietitian	Fargo, N. D.
	Branch No. 9	
Matilda S. Bonnell	Staff Dietitian	Topeka, Kans.
Laura Pahmeier	Head Dietitian	Springfield, Mo.
	Branch No. 10	
Lucile S. Ryan	Staff Dietitian	Jackson, Miss.
	Branch No. 12	
Jean Granger	Staff Dietitian	Oakland, Calif.
Marion M. Stambler	Staff Dietitian	Los Angeles, Calif.

CALGONITE* for mechanical dishwashing. CALADE* for hand dishwashing. CALGOLAC* the sudsless cleanser for bar glassware. NOCA* all-purpose kitchen cleanser for hand use.

*T. M. Registered U.S. Pat. Off.

†Calgon is the registered trademark of Calgon, Inc., for its vitreous sodium phosphate.

wash more dishes-cleaner

use

CALGONITE

it contains 40% Calgon†

1 Lipstick marks show up dishwashing inefficiency . . . but even without visible warning your dishes may be dangerously dirty. Dirty with a coat of washing film that harbors bits of food . . . stale odors . . . rancid tastes, and often—germs.

2 Strong alkalies may cut lipstick but they cannot remove washing film. On the other hand, you cannot remove washing film and leave lipstick. Dishes without lipstick are not necessarily clean . . . but *with* it they are dirty . . . all over.

3 Use Calgonite . . . and use it as directed . . . to make sure your dishes come out of the dishwashing machine clean . . . free of lipstick *and* washing film. The Calgon in Calgonite *eliminates* washing film . . . *softens* water . . . stimulates alkaline cleansing to a vigorous degree . . . *prevents* formation of scum and scale.

4 Test Calgonite* against any other dishwashing compound. Test it not on cost-per-pound but on cost-per-*clean*-dish. See how Calgonite cuts the cost of *clean* dishes. Write for free dishwashing instructions. Calgon, Inc., Hagan Building, Pittsburgh 30, Pennsylvania.

refrigeration. Although some types of wrapping were more satisfactory than others, all gave some protection to the fresh quality of the vegetables.

Adequacy of School Lunches. Dr. Milicent Hathaway and Dr. Frieda Meyer of the Bureau of Human Nutrition and Home Economics are making a study of the adequacy of twenty-eight lunches served at two seasons in two Maryland schools. These meals served to children in third to sixth grade are being analyzed, and reports have been made on ascorbic acid, thiamine, and riboflavin. These workers report that, judging from the meals analyzed, ascorbic acid is low in many school lunches, except on days when a citrus fruit juice is served. Thiamine, they report, is the nutrient most often low in school lunches. Of the twenty-eight lunches studied, only one provided one-third of the day's needs of this vitamin as recommended for twelve-year-olds by the National Research Council. Ten lunches provided enough for an eight-year-old child. The lunches did provide ample riboflavin, since most of them included milk.

Peanuts in Corn Bread. Dr. Ouida D. Abbott, Florida Experiment Station, suggests the use of ground raw peanuts in corn bread as a means of improving southern diets. The peanuts would give the bread more protein, fat, and niacin. She suggests a mixture containing one-third raw ground peanuts to two-thirds corn meal. This mixture contains 15 per cent protein as compared to 9 per cent for corn meal alone. It carries more than 17 per cent fat, as against 4 per cent for corn meal, and bread made from this mixture has six times as much niacin as plain corn bread. Dr. Abbott recommends grinding raw peanuts in an ordinary food chopper with a fine blade, making up enough at one time for several days' supply. The ground peanuts should not be kept too long, however, because they will turn rancid.

Sirup in Frozen Fruit. Experiments have been conducted at the Oregon Experiment Station to learn the best sirup for sweetening fruits for freezing. Thirteen different fruits were packed and frozen in twenty-two different sirups. The fruits tested were one variety each of apples, apricots, raspberries, sweet cherries, red sour pitted cherries, pears, rhubarb, and strawberries. A total of 3798 packages of fruit were frozen, using sirups which ranged from straight sugar sirup to straight corn sirup to various blends of the two.

When the fruits were defrosted and served to taste judges, the highest rating for flavor, texture, and color went to those fruits packed in a medium or heavy sirup containing light corn sirup. With the blend of sugar and corn sirup, however, there was less oxidation of the fruit than with straight sugar or straight corn sirup.

Baking at High Altitudes. Dr. W. E. Pyke of the Altitude Laboratory of the Colorado Experiment Station suggests that when baking at high altitudes the amount of leavening be reduced and the quantity of liquid be increased. In his experimental work, he has found that as the altitude increases, the internal temperature of the cake during baking decreases. He says, "At 10,000 ft. the internal temperature within the baking cake will be at least 18°F. lower than at sea level. The structural strength derived from the flour and eggs will be much less. It is wise, therefore, to add liquid needed in the form of egg to provide additional strength to counteract the tenderizing effect of altitude." His photographs show that a recipe which at sea level produces a light cake of even texture will fall in the center at 5000 ft., and at 10,000 ft. the cake will have lost all of its lightness and be almost as flat as a pancake.

How to Serve Canned Citrus Juice. By pouring chilled canned citrus fruit juice back and forth from one glass to another, the flavor can be made more like that of fresh juice, for the air removed during vacuum canning is replaced. However, USDA scientists warn that this should never be done in advance. Otherwise, the added air will speed the oxidation of ascorbic acid. They also recommend that the juice be well chilled, for oxidation is slower in lower temperatures and in addition, the cold juice absorbs air more readily.

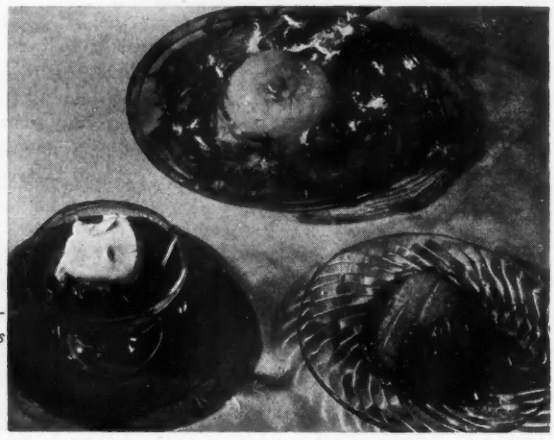
Fish Consumption. According to estimates of the Department of Agriculture, consumption of fish and fish products in this country has risen gradually since 1932 from 9 lb. per person to 11 lb. in 1947. The only drop came during the war, largely because of heavy purchases of canned fish for military and Lend-Lease use. Recently, studies in about twenty inland cities indicate that people prefer commercially frozen or packaged fish to fresh fish, caught locally.

Preparing Green Beans. Despite the rather prevalent custom of "Frenching" green beans, the Minnesota Experiment Station reports that in this process ascorbic acid is lost. Recent tests there showed that Frenched beans hold only half as much of the vitamin as beans cooked whole or in inch lengths. The whole beans and the inch pieces had half of their original ascorbic acid after cooking, but the Frenched beans had only a fourth. The tests showed that 36 per cent of the ascorbic acid lost by the Frenched beans was in the cooking water.

Storing Strawberry Preserves. In studies at the New York State Experiment Station, Geneva, it was recently reported that there is a critical and an ideal temperature for storing strawberry preserves. Above 60°F. the color is lost rapidly. At 90°F., the preserves lost as much color in one week as those stored at 60°F. for six weeks. Yet samples held at 34°F. kept their color only slightly better than those kept at 60°. It was also learned that the initial storage temperature is important, and the New York scientists advise cooling preserves to below 60°F. as soon as they are sealed in containers and then keeping storage warehouses at 60°.

Twenty Tasty Servings—
In Individual Envelopes

ACCEPTED COUNCIL ON FOODS AND NUTRITION AMERICAN MEDICAL ASSOCIATION



Sugar-Free Desserts—

FOR THE DIABETIC

Make colorful, sparkling desserts and salads with CELLU GELATIN DESSERT. *It's sugar-free!* Six refreshing flavors: true fruit Orange, Lemon and Lime; imitation Raspberry, Strawberry and Cherry. Convenient to use, because CELLU GELATIN DESSERT is packed in individual-serving envelopes.

LOW CARBOHYDRATE

CELLU Dietary Foods

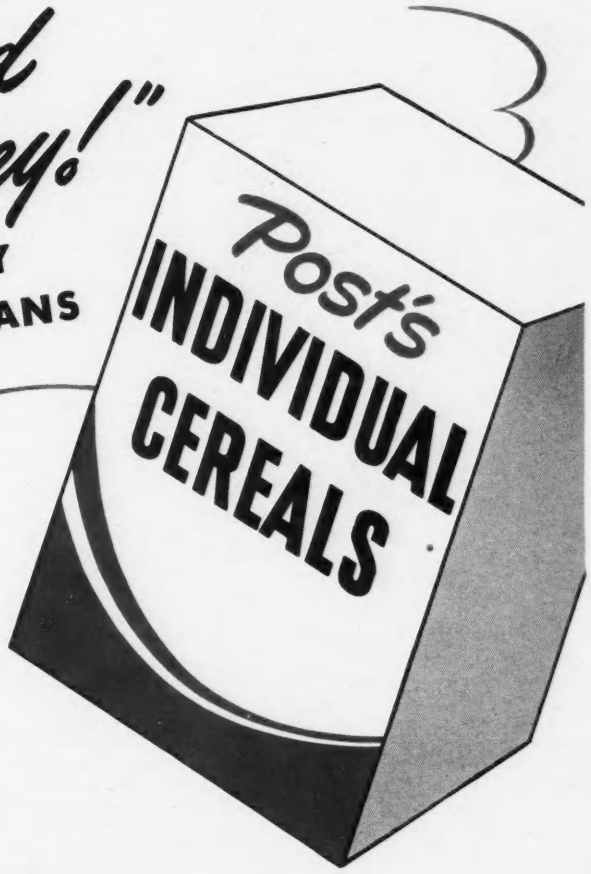
CHICAGO DIETETIC SUPPLY HOUSE Inc.
1750 West Van Buren Street Chicago 12, Illinois

FREE CATALOG

Send for new catalog of Cellu Dietary Foods, including tasty recipes, tables of food values, vitamin charts, etc.

"Serve 'em and Save Money!"

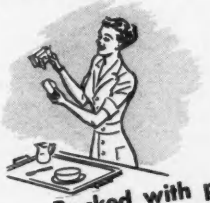
ADVISE THRIFTY HOSPITAL DIETITIANS



Post's Cereals cut food costs!

Variety! Cereal for every taste!

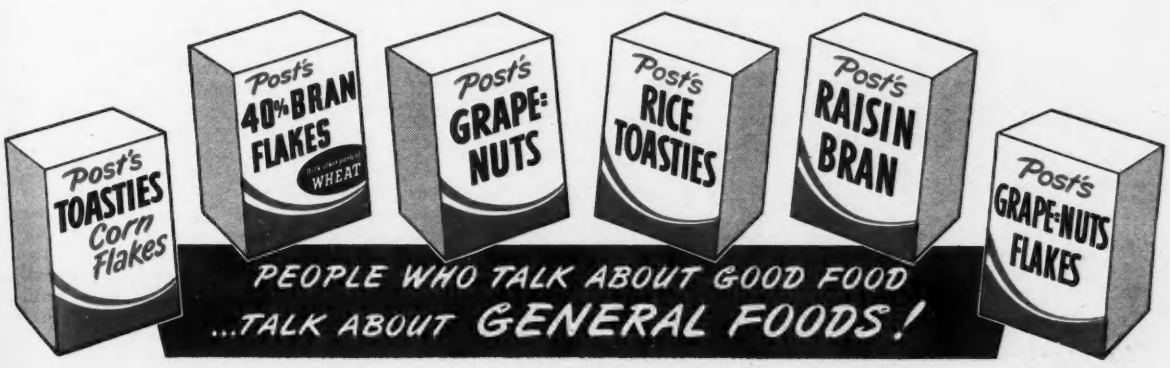
Patients say they're fresh, nourishing!



Packed with premium coupons for you!

● Serve Post's Individual Cereals to your patients and employees . . . and benefit *in many ways.* First, you save money because the 1-oz. package can be served again, if unopened. Second, you offer good, nourishing cereals because Post's are safely cellophane-wrapped. Third, you provide pleasant variety because there is a cereal for every taste. And you benefit personally . . . because Post's Individual Cereals, like almost all General Foods institution products, are packed with premium coupons. Write for free Premium Catalog, showing gifts for home, office, kitchen. General Foods Premium Dept., Battle Creek, Michigan.

POST'S *Individual* CEREALS



PEOPLE WHO TALK ABOUT GOOD FOOD ...TALK ABOUT GENERAL FOODS!

NATIONAL DAIRY Sealtest PRODUCTS CORP.

Sealtest

cordially invites you

to visit the

Sealtest Booths

131 and 132

at the

Thirty-first

Annual Meeting

of the

American Dietetic

Association

in

Boston, Massachusetts

October 19 to 22, 1948

News of State Associations

Iowa Dietetic Association. At the business meeting held on May 21 at the Hotel Savery, Des Moines, officers for 1948–49 for the Iowa Dietetic Association were elected. They are: President, Beatrice Donaldson; President-Elect, May Morris; Vice-President, Helen Goodenow; and Secretary, Sister Grace Marie. The program for this spring meeting included, in addition to the business meeting, the following talks: "Dietetics in Hawaii" by Helen Ehlert of the Veterans Administration Hospital, Knoxville; "Dietetics in the Army" by Capt. Myrtle Aldrich, Fitzsimons General Hospital, Denver; "Low-Sodium Diets" by Dr. Herman J. Smith; and "Rationale of the 200-Mg. Sodium Diet" by Mary Ann Crecklow, Dietetic Intern, University of Iowa Hospitals.

Ohio Dietetic Association. The first prize winner in the Annual Project Contest for dietetic interns in Ohio was won this year by Eleanor Wolfe Latterell, an intern at University Hospital, Columbus. Mrs. Latterell won this honor for her paper on public relations, which was written as a basis for a talk by a dietitian before a group of senior high school girls or freshman or sophomore college students. The paper, titled "Finding Your Place in the Sun" was published in the *Ohio Dietetic Association News*.

The former *Toledo Dietetic Association* is now known as the Toledo Home Economics Club and represents three interests in home economics—dietetics, education, and commerce.

Association Activities

Dietetics at Evanston Hospital. In the August issue of its monthly bulletin, *The Pilot*, the Evanston Hospital Association, Evanston, Illinois, features the work of the Dietary Department. The members of the dietary staff are introduced and their work described. In addition, the training required to be a dietitian is explained. Since *The Pilot* reaches a large audience in Chicago's North Shore area, the August issue should prove most helpful to the A.D.A. public relations and vocational guidance programs. A number of excellent pictures help to depict the wide variety of activities in which dietitians play an important part. Some of these pictures were taken in collaboration with the A.D.A. for use in the national vocational guidance program.

New Booklet by South Carolina Dietitians. The South Carolina Dietetic Association has recently published an attractive booklet titled *Dietitians in South Carolina*. This booklet contains information about qualifications for membership in the state and national associations, and the various fields of work in which dietitians are engaged are described in short paragraphs written by some of the South Carolina dietitians. Also included is a bibliography of vocational material made available through the A.D.A. This booklet has been distributed in the high schools of South Carolina along with copies of "Dietitians in Demand."

News of Advertisers and Exhibitors

California Fruit Growers Exchange has prepared a 2-reel color film in sound titled "The Golden Foods" which will be shown for the first time at the A.D.A. convention in Boston. This film, which runs about 30 min. and requires 16-mm. projecting equipment, demonstrates the nutritional benefits of citrus fruits. A leaflet has been prepared for distribution at the time of showing the film, which includes still reproductions of some of the frames of the film, as well as recipes and factual material. The film may be obtained without charge from Castle Films Division, United World Films, Inc., 445 Park Avenue, New York 22, New York. The California Fruit Growers Exchange is also distributing a booklet, *Sunkist Menu Ideas for the Food Server*, to people concerned with large quantity food production. Included in it are sections on how to prepare oranges, various ways to serve citrus fruits, beverages made from citrus fruits, and how to use lemon as a garnish as well as in prepared foods.

General Foods Corporation is proud that the Chairman of its Board, Clarence Francis, is serving as Chairman of the 1948 United Nations Week observance October 17 through 24. Nationwide educational activities in behalf of UN will be conducted under joint sponsorship of the American Association for the United Nations, the National Broadcasting Company, and the National Education Association in cooperation with eighty other national organizations.

The *John Van Range Company* has recently put on the market an automatic pressure-type steam cooker. In this new model the cooking operation in each compartment is controlled individually by the use of electric time clocks so that the steaming period can be predetermined. The pressure is automatically released making it unnecessary to remove food at once to prevent overcooking. Insulation between compartments prevents baking after the cooking is ended. This model may be obtained in two-, three-, or four-compartment sizes with standard height compartments, or in two- or three-compartment sizes with extra height compartments. Safety in operation is insured by a red light which warns that steam is in the pressure compartment. When the desired time has elapsed, the steam is shut off and the exhaust opened, the red warning signal remaining on until the pressure is exhausted. Then a green light indicates that it is safe to open the door of the compartment.